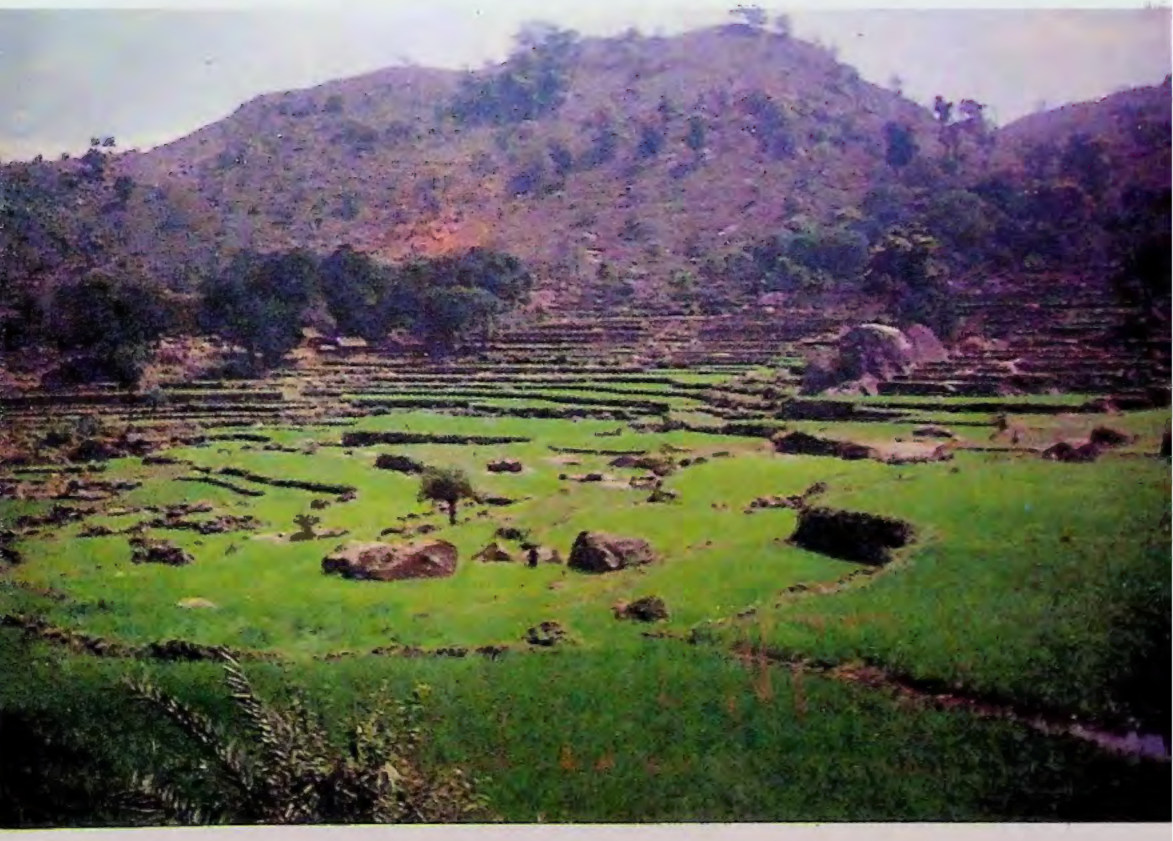
SWIDDEN CULTIVATION AMONGST TWO TRIBES OF ORISSA



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EXPLANATION OF PHOTOS

Front Cover

When the hills were exhausted due to Swidden Cultivation, the Saoras of Gumma Block in Ganjam took to terrace cultivation

(Courtesy : Dr. N Patnaik)

Back Cover (top)

Terraced rice cultivation by the Saoras in Ganjam district. The result of painstaking care of generations.

(Courtesy : Dr. N Patnaik)

Back Cover (bottom)

Women of the Juang tribe in Keonjhar readying pineapple for plantation in Podu ravaged areas

(Courtesy : Dr. N Patnaik)

SWIDDEN CULTIVATION AMONGST TWO TRIBES OF ORISSA

DR. N. PATNAIK

26TH JANUARY 1993

CENTRE FOR DEVELOPMENT RESEARCH & TRAINING (CENDERET)
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FOREWORD

The efforts of ISO/Swedforest, Consultants in Forestry on behalf of the Swedish International Development Authority (SIDA) in bringing out a series of publications on forestry in Orissa are commendable. The present title - SWIDDEN CULTIVATION AMONGST TWO TRIBES OF ORISSA, as is learnt, is the fifth in the series. Thoughts concerning Podu Prevention especially during the last decade, have been expressed by a large number of specialists in the fields of ecology and environment, forestry, pedology, agriculture, horticulture, irrigation, social sciences and the like. There have been seminal contributions following the Man and Biosphere (MAB) approach and the sustainable and participatory development intervention through Human Resource Development (HRD) - all aiming at the Prevention of Swidden Cultivation (PODU) by providing viable economic alternatives.

There have been constant attempts at the rehabilitation of displaced Podu cultivators, so that the eco-balance is maintained through halting the practice of Podu cultivation and the natural forest cover is restored. Sincere thanks are due to the author and the sponsoring organisation for such a timely and stimulating study on a vital issue which is deeply connected with the fact that the revitalisation of the Quality of Environment (QOE) vis-a-vis the Quality of Life (QOL) will pave the path of development.

It is nonetheless true that the autochthonous denizens of hills and forests from time immemorial do preserve forests, perpetuate eco-equilibrium and eke out their living out of forest eco-system by maintaining symbiosis and they should not be made absolutely responsible for environmental imbalance.

The author of the present volume has besides highlighting the issues and implications, followed a micro-approach in depicting vividly and in a lucid manner facts and figures. Two illustrative case studies in two distinctive eco-cultural regions - The Juang of Banspal Block of Keonjhar district and the Saora of Ganjam district. The Annexure VII which contains 'Future Strategies and Recommendations' could have been clubbed together in order to make them more precise and meaningful by avoiding repetitions, however, they seem to be elaborate.

I deeply appreciate the efforts and sincerely thank the author.

D P Bhattacharya, IAS
Principal Secretary to Government &
Commissioner, Tribal Welfare
Harijan and Tribal Welfare Department
Orissa, Bhubaneswar

18 December 1992

PREFACE

The present volume is the fifth in the series, *Orissa Writings in Social Forestry*. We hope more volumes will see the light in the course of 1993.

True to the purpose for which the series was started, the book deals, once again, with shifting cultivation, or rather with two particular groups who practice it, the Juangs of Keonjhar district and the Saoras of Ganjam district.

Volume One, *Helping Forest Dwellers of Orissa to Adopt Viable Alternatives to Shifting Cultivation*, and Volume Three, *Sloping Agricultural Land Technology (SALT), An Alternative to Shifting Cultivation in Orissa* dealt with technical aspects of the problem. The present volume focusses attention of the reader on the *people* who practice it. Without a sympathetic understanding, one can with difficulty establish a relationship of trust, needed to help the tribal groups to adopt viable alternatives.

The book has been written by Dr Nityananda Patnaik, a scholar who knows the tribes of Orissa well, has lived amongst them, and has penetrated deeply into the whole culture woven around swidden cultivation. Not surprisingly he has earned the trust of the people in return.

Dr Patnaik suggests that the tribes are not frozen in an immovable past but do adjust to change. The process can hopefully be speeded up so that their forest economy can be stabilised and the forest cover can be saved in the process as well.

In continuation of a practice started in earlier volumes, the present one contains interesting and useful appendices with information on how shifting cultivation was approached by official and non-official agencies in the past.

As editors of the series, we are grateful to Dr Patnaik for having given us the opportunity to publish his inspiring work. We also thank Shri DP Bhattacharya, IAS, Principal Secretary to Government, and Commissioner, Tribal Welfare, Harijan and Tribal Welfare Department, Government of Orissa, who has kindly written the Foreword for this volume.

We also thank Shovan press and other silent workers who have made the publication of this book possible.

Stefan Jonsson
ISO/SWEDFOREST

Bhubaneswar
26 January 1993

Michael V.d. Bogaert s.j.
Coordinator, CENDERET

INTRODUCTION

Ever since man was evolved the forest has been of great service to him by meeting his essential needs of food and shelter. Man has been on earth for several million years; for over 90 percent of this period he has lived as a hunter and food gatherer. Only in the last few tens of thousands years has he begun to domesticate plants and animals, to use metals and to harness energy sources other than the human body. This shows the long association of man with forest.

We can find even today many tribal communities living in forests since hundreds of years where they lead a life in comparative isolation. These communities by virtue of their long association with the forest have enjoyed considerable freedom to use the wood and fuel, to hunt the animals and to exploit the minor forest produce for their sustenance. Their folktales, art and music are full of ideas concerning sylvan surroundings. The forest not only provides food and shelter but also satisfies their ethos and sentiments. This intimate association has developed a symbiotic relationship of the tribals with the forest as was the case in the early days of the entire human society itself.

Shifting cultivation is one stage further relative to hunting and foraging in the evolutionary stages of development. Since the neolithic times extensive areas of forest land has been farmed every year under the conditions of shifting cultivation, which can be defined minimally as continuing agricultural system in which temporary clearings are cropped for increasingly shorter periods in years. This form of cultivation is known as Jhum in the North-Eastern States of the country, Bewar in Madhya Pradesh, Podu in Andhra Pradesh, Dongar chasa, Kaman or Biringa and Bagada in Orissa.

Tribal Communities and Shifting Cultivation

Not all tribal groups practise shifting cultivation. It is only those primitive sections among them who do practise shifting cultivation. Among these primitive tribal communities there are some sections who are more primitive than others. It is these more primitive sections who follow this cultivation as their primary source of livelihood. A comparative picture of the chief characteristic features of these two sections of the primitive tribes is given below.

Class A (more primitive)	Class B (less primitive)
1. It's members live a largely communal life (for example, Hill Marias, Baigas, Juangs, etc.)	1. Their village life has become individualistc. (for example, Gonds, Bhuinyas, Santals, etc.).
2. Economically they still share with one another. There is little or no property in land, i.e. the lands belonging to the community and clearings for axe cultivation are distributed by common agreement. A man who has a poor crop one year is given the best clearing next year.	2. They no longer share things with one another. The spirit of competition has entered though the clearings belong to the community. The individual claims to land are recognised.
3. For them shifting cultivation is more than a form of agriculture, it is a way of life. They can not visualise existence without it. It is established in the mythology of the tribes, i.e. it was taught to them by their supreme beings. A large part of their lives is spent in the clearings and in some fields huts which they make for safety from wild animals.	3. Shifting cultivation is more a habit than a part of their life. It has only doubtful linkage with their mythology or religion. Its customs are no longer clear and compelling. There is no taboo on the use of the plough and, in fact, members of these tribes look down on the digging stick as too elementary for them. Unlike most of the people of Class A they have a fair number of cattle and know how to use cattle drawn ploughs.
4. They are sigh of strangers, honest, simple and innocent. Crime is rare and women virtuous. Domestic life is marked by fidelity. Adultery is punished by divine vengeance.	4. They are more used to outside life. They are accustomed to going down to bazaars and have been gradually imbibing bad habits.

Conditions favouring change

Conditions favourable for a change from shifting to settle cultivation, which have been derived from the analysis of the present situation are listed below :

North of Mahanadi

1. People are aware that crop yields are steadily diminishing.
2. People see the material advantage of settled cultivation. (Bonai, Bamra and Pallahara tribes are in search of settled cultivation).
3. Success of the pilot scheme at Redhakhol has brought about a change in outlook of the obstinate neighbouring tribes.
4. Desire for permanent settlement & settled cultivation has been created.
5. The population explosion is putting pressure on limited resources.
6. The cattle population is also responsible for denudation.
7. Greater contact, acculturation and a higher level of literacy and educational standard have created a desire for change.

Coverage under Shifting Cultivation

The area affected by shifting cultivation, the size of the population and the tribal communities involved in this type of cultivation in different districts are given below:

TABLE 1

District	Area affected (in sq. kms)		Size of Population	Tribe
Koraput	11528.07	(31%)	340,000	Bondo, Didayi, Koya, Khond, Gadaba, Saora.
Ganjam	2980.11	(08%)	79,000	Lanjia Saora
Phulbani	8435.20	(23%)	195,000	Khond
Kalahandi	1323.50	(04%)	33,000	Khond
Total	24266.88	(66%)	647,000 (Per 100 sq. kms 2666 persons)	
Sundargarh	2270.06	(06%)	15,000	Paudi Bhuinya
Keonjhar	2527.73	(07%)	28,000	Paudi Bhuinya & Juang.
Sambalpur	6852.44	(18%)	12,000	Kondh
Dhenkanal	1167.00	(03%)	4,400	Bhuinya
Total	12817.23	(34%)	59,412 (Per 100 sq. kms 464 persons)	
Grand Total	37084.11		706,412 (Per 100 sq. kms 1904 persons)	

South of Mahanadi

1. The population is greater and more sparse, but heavy enough for the type of the country.
2. Land for settlement appears to be less.
3. Podu cultivation covers vast tracts and has rendered vast areas bare of vegetation.
4. The tribal population involved is very large, particularly the Khond population.
5. People are more indolent.
6. Most of 3000 ft. plateau in Koraput, from Koraput via Padwa to Potangi (of 300 sq mls), has become almost bald. (Strip cropping making use of the locally abundant sum grass PENNISETUM HOHENACKERI as a soil-binder should be introduced. Cultivation on slopes exceeding 30 degrees should be stopped. The grass should be protected from excessive grazing).
7. There is a bigger cattle population, and lower slopes as well as higher slopes right up to the summit have been grazed bare by cows and buffaloes.

Two areas, the Juangpirh and Bhuinyapirh of Keonjhar district and Ramgiri of Ganjam district, where shifting cultivation is practised by the Juangs and the Bhinyas in the former area, and the Saoras in the latter area, are presented in this study. Several measures are being taken to pursuade people to give up shifting cultivation and in its place take up improved and profitable practices of agriculture and horticulture. The study shows that even though the Junags have started utilizing the schemes such as water harvesting structures, waste-land development and plantations of fruit trees they continue the practice of shifting cultivation side by side. In contrast, the Saoras have of their own accord taken up orange plantation in podu ravaged hill-slopes and their orchards which fetch substantial income have replaced shifting cultivation to a large extent in the Mahendragiri hills.

Besides these two studies, some previous studies with findings and recommendations have been given in the Annexure.

A short select bibliography on shifting cultivation has been given at the end of the report.

THE JUANG OF KEONJHAR AND THEIR DEVELOPMENT

A SHORT ETHNOGRAPHIC ACCOUNT

Amidst the mountains of central Orissa, there is a spring in the district of Keonjhar which is the source of the river Baitarani. This spot, near the Juang village of Gonasika, is sacred to the Hindu inhabitants of Orissa; while the Juangs also consider it to be sacred, as the first man on earth was born here and have been living there ever since. The word Juang or Juanga in the language of the Juangs means a human being, in contrast to other inhabitants of the forest which surround them.

According to 1981 Census, the Juang population was 30,875, constituting 0.52 per cent of the total tribal population of the State. In the year 1971 their population was 24,384. Thus the growth rate of the Juangs during the decade 1971-81 is 26.62 per cent as against 16.62 per cent and 20.17 per cent of the State's tribal and general population respectively.

Settlement

Though the general layout of villages is irregular and compact, the form is actually related to the physical character of the ground. Hill-tops have too thin a cover of soil and are, therefore, left unused. It is only the forested slopes, or the valleys below, which are fit for cultivation. Therefore, the Juangs prefer to build their settlements either on the slopes or on valley-bottoms where there is enough ground, and which are not too far away from sources of drinking water. The number of houses which form a shifting cultivators' village is usually two dozen or less.

Conspicuous in the village is the bachelors' dormitory, which is called Mandaghar in Keonjhar and Majang or Darbar in Pallahara. Formerly, villages had also a maidens' dormitory called Dhangribasa; but now it has practically disappeared, and girls are accommodated at night in a spare room in their own homes, or they sleep in some room belonging to a widow.

The Mandaghar is the largest hut in the village. It has walls on three sides and is open in the front. Sometimes the side-walls and wooden posts are carved with decoration symbols, depicting animals. At the back, either a small room or a raised wooden platform is built to store articles. A fire is always kept alight in the centre of the room and visitors to the village are also accommodated there.

Unmarried young men sleep there at night and also maintain the house in good repair. In this they are also helped by the unmarried girls. Boys hang their changu, a flat tambourine like drum of large size, on deer-horns fixed in the wall. In front of the Majang or Mandaghar-dormitory is a small open space, where dances take place almost every evening after the day's work is over.

The elders of the village spend a large part of their time in the dormitory, or in the open space in front, either working on their basketry, or gossiping and smoking. Matters of common interest such as division of land for shifting cultivation, or affairs connected with marriage or religious observances are all discussed here. In some villages, an upright piece of stone, set up in the ground nearby, is regarded as the seat of Gram-siri, the village deity. In Pallahara, there was a sacred grove in the forest with large trees which are never cut, and it is in this grove that the village deity represented by an upright stone is installed. The two central wooden posts of the Majang, again, are supposed to be the seats of the divine couple, Burham Burah and Burham Burhi.

Houses

Huts in the Keonjhar Hills are of a similar type. They are rectangular in plan, about 20 ft x 12 ft. in size. Walls are of wooden upright logs, plastered over with mud. Roofs are thatched with various kinds of grasses, some of which are specially cultivated for the purpose. In each house is also a courtyard in front over part of which is a scaffold, with creepers of gourd trained upon it. Inside the living room, there is a small oven for cooking and also for warming the room in winter. Besides the oven, there is often a hole in the ground which is the mortar in which paddy or some other grain is pounded. In the courtyard there may be another oven over which paddy is boiled before husking. The Juangs sleep on mats of date-palm leaves, which are made by their womenfolk.

Hunting, Collecting and Fishing

Collection of roots, leaves and berries is mostly the duty of women. But if the roots are deep down, then men also come in for help. Some of the roots are of acid taste, and have to be washed again and again in baskets in a running stream before they can be used for food. The larvae of red ants, which build their nests by gumming up leaves on a tree, are used as pickles.

In spite of all their efforts, the Juangs, in many villages, do not get enough food to eat. S. Bose reports that, in the comparatively rich village of Raidiha, the average consumption is 2 lbs. of rice per day, while in a poor village like Kadalibari, it is half a pound of rice, and less than half a pound of root crops per head per day.[1]

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1. Bose, Saradindu : *Carrying Capacity of Land Under Shifting Cultivation, Asiatic Society,* Calcutta, 1967, p. 116.

As the villages of Gonasika and the neighbourhood in Keonjhar are permanent, they have a fairly large number of mango and jack-fruit trees, the fruits and seeds of which supply the Juangs with food for the summer months of the year. The kernel within the mangoseeds are crushed and made into a kind of paste. The seeds of the jack-fruit yield food of much better quality. But with all this collecting, there is great shortage all the year round; and they have to seek other means to fill in the gap.

The men collect timber from forests and sell them to their neighbours. The women in Keonjhar collect large bundles of kendu (Diospyros embriopteris) leaves, which are purchased by traders from the plains, who export them for the manufacture of country cigarettes (biri).

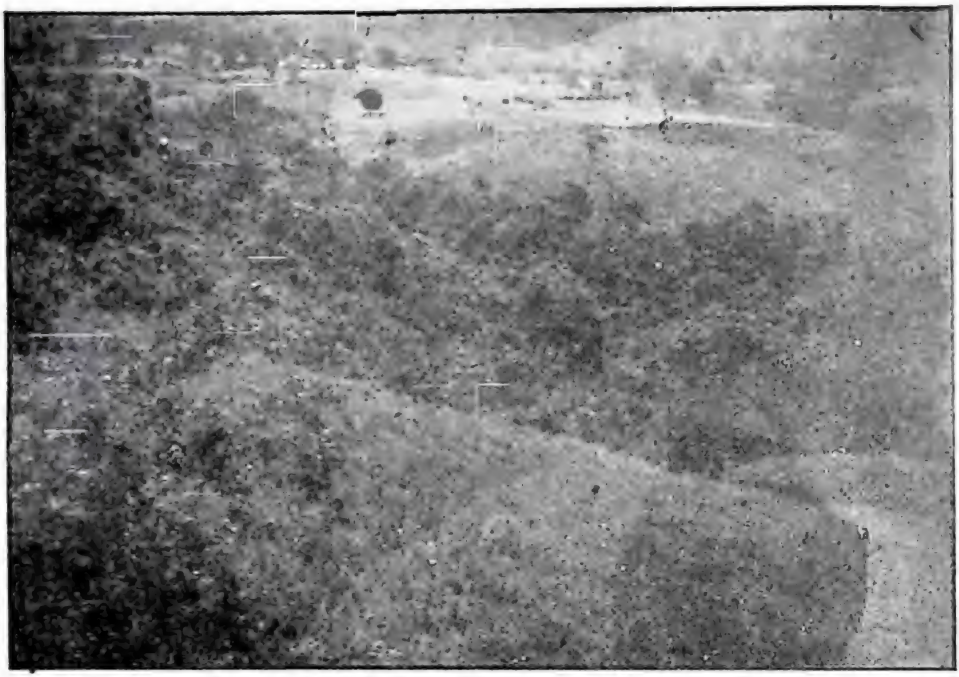
In many villages, women collect leaves of the wild date-palm, and weave mats which are sold outside. The men in Pallahara gather bamboo from the forest, manufacture basketry, and sell them in the weekly markets held several miles away from their homes. The forests thus furnish some amount of food to the Juangs as well as some raw materials for their meagre home industries.

Agriculture and its Insufficiency

The Juangs depend for their livelihood chiefly on shifting cultivation, which goes by the name of dahi (firing), kamana (shaving) or taila in the Keonjhar Hills. There is some amount of permanent cultivation in low-lying paddy fields, known as bila jami, or of crops such as maize or mustard and tobacco in the garden plots attached to the domestic dwellings. This land is known as bari jami. Hill-tops which have a thin soil-cover are avoided. Taila, henceforth called cultivation by firing or swidden or axe-cultivation, is restricted to hill-slopes with some amount of better soil. Bila land is terraced by means of balks in order to hold water, and are fairly flat.

Axe-cultivation is practised in plots for two successive years, and then left to recuperate. It is said that the period of regeneration used to be 22 years; but by means of counting rings on fresh branches in land cleared by axe, S. Bose found that it could not be more than 12 years on an average. In the first year, niger oil-seeds (Rasi or Guizotia abyssinica) are grown for sale. In the second year, paddy is sown in the middle of the fields, while several kinds of millets are sown all around. The tall stems of mandia (Eleusine coracana), which are planted in the outer perimeter, act as a kind of fence and protect the paddy from the depredation of wild animals. Both rice and millets are used for domestic purposes.

In spite of hard work and constant supervision, the Juangs are able to raise only an insufficient amount of crops for their sustenance. Wet cultivation yields more; but there is not enough of such land in the inhospitable hill-sides



Podu ravaged bald Hills, Juangpirh, Keonjhar District

to which the Juangs have been pushed by the more energetic and adventurous cultivators belonging to other communities. S. Bose gives us some valuable figures about production and the carrying capacity of land in three villages in the Juang country near Gonasika in Keonjhar. These are summarized below:

TABLE 2

Name of village	Population	Area in sq. miles	Total available land (in acres)	Present land use in acres		
				By Axe	Wet Paddy land	Garden
Raidiha	127	1.642	940	118	77	19
Kadalibari	89	1.1	672	90	3.5	15.5
Hatisila	72	1.562	929	108	0.22	9

TABLE 3

Name of village	Supportable capacity with 2 lbs. of rice per day per person		Total Population
	By Axe alone	By all three methods combined	
Raidiha	35.1	121.6	127
Kadalibari	22.3	30.7	89
Hatisila	39.8	62.7	72

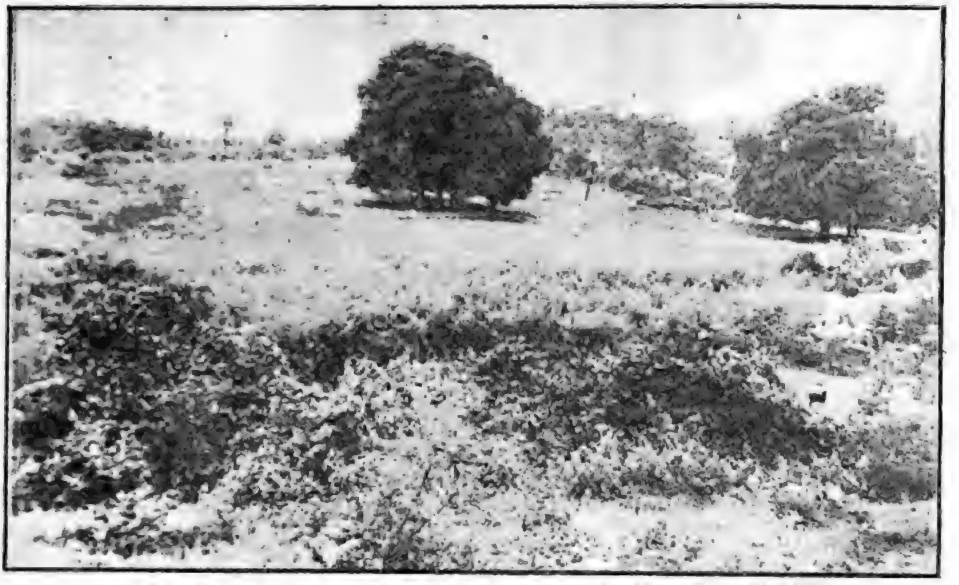
These tables show that the amount of wet paddy-land or garden plots is very small in comparison with what is suitable or available for axe-cultivation. Kadalibari, for example, can support 30.7 adult units with two square meals a day; but there are 89 mouths to feed. The position in Raidiha or Hatisila is better. Whatever may be the case it is clear that the calculations are on no more than two square rice-meals a day and this is no more than at the subsistence-level.

S. Bose, therefore, summarizes the consequences as follows:

1. Instead of depending on their own land, people work in rich villages (such as Raidiha) as hired labourers.
2. Some people (of Kadalibari) have migrated to other villages.
3. People have to lower the rate of consumption of food.
4. Many people have run into debt.
5. Change in land-use. They have recently extended wet paddy cultivation to 31.5 more acres of land. But because enough water was not available, crops did not grow. Now they are planning to divert a small stream for watering this land.

We have also observed that besides these alternatives, the Juangs of some villages in Keonjhar have begun to work as labourers on roads which are now being built through their country. There they earn fairly decent wages.

But with all this, the people are yet unable to cover up all the shortage which occurs; and the last resort is to large-scale migration, which is often to more inhospitable, more rocky slopes up the mountain sides. When some Juangs thus leave their parent villages and found new ones, not very far away, they often name the upper settlement in accordance with the old. Thus Panasanasa has now become broken up into Tala Panasanasa (the lower one)



Vast areas bare of vegetation, Juangpirh, Keonjhar District

Hill-slope under paddy cultivation, Juangpirh, Keonjhar District

and Upar Panasanasa (the upper one). On the whole, the Juangs are a conservative people and are reluctant to leave their homes unless under acute distress. A few years ago, the Government gave the residents of one village a new piece of land to build their homes. This was done, but an accidental fire occurred, and the Juangs returned to their old site, because they thought that the gods had become displeased with them.

But evidently, when the pressure of population is high on the little space into which they have been squeezed, the majority have begun to adopt low-land cultivation in imitation of their neighbouring peasantry. Thus, many Juang villages have sprung up in western and northern Dhenkanal.

Formerly, it was the custom among the Juangs to live in villages practically inhabited by families belonging to one single clan. But after the adoption of permanent plough cultivation, villages have become bigger in size, and are built in the linear pattern prevalent in Orissa. Many clans have, therefore, come to live together in the same settlement.

INTEGRATED TRIBAL DEVELOPMENT OF JUANGPIRH

When I was preparing an integrated Tribal Development Plan for the areas under sub Plan in Keonjhar district, Orissa, I lived for a period of eight months in a Juang village called Kadalibadi. My study in and around this village had revealed that the Juangs seemed to be disinterested in shifting cultivation and tended to give their attention more to the wet cultivation in the valley bottom than to shifting cultivation. On the basis of these findings and observations, I recommended some suitable measures for controlling the shifting cultivation. Some of these recommendations are reproduced below :

1) The Juangs may be approached and persuaded to stop second year Taila cultivation in the hill-slope. But they should be allowed to continue the first year Taila cultivation for some time to come.

   It is recommended that land stretching upto 3 per cent slope should be brought under permanent cultivation immediately. This area will be utilized for intensive agricultural development by supplying necessary inputs like, quality seed, fertilizer, pesticide, etc. Many villages have perennial source of water. Wherever minor irrigation is possible it should be taken up soon and the lands available nearby should be brought under cultivation. By various indigenous methods the Juangs harness the hill streams to irrigate the lands under permanent cultivation. Further help in this regard will hasten the transformation from shifting to settled cultivation.

2) Once the valley-bottom is developed or permanent paddy fields are available, the taila cultivation for the first year can be restricted to a range of slope initially between 12 per cent and 20 per cent for coming five years. After that period the category of land for Taila may come down to between 8 and 12 per cent. At the initial stage Taungiya system of horticulture should be encouraged. This is how it should be done. In the first year taila land they sow the seeds of niger in the month of July. After the sowing season in over both taila land and permanent fields (land near homestead lands) they should be encouraged to plant mango, jackfruit, papaya and banana trees which they already know how to grow. These trees may be planted just before the end of the monsoon, so that they will grow satisfactorily without disturbing the growth of oil seeds. The fruit trees should be planted along the ridges of the taila lands so that they do not interfere with the growth of the cash crops. By the harvesting time these trees will come up to a height of safe growth and when they attain full growth they would prevent further soil erosion and at the same time provide fruits to the tribals. Improved varieties of fruit trees should be grown.

3) In the second stage, say, after five years, when all land between 12 and 20 per cent slope will have been brought under horticulture and people have gained knowledge in horticulture and take pride in the maintenance of individual orchards, at that time encouragement should be given to them to turn to land having slope between 8 and 12 per cent for the purpose.

Two categories of land, namely, land having slope from 8 per cent to 12 per cent, and land having slope from 12 per cent to 20 per cent, may be utilized simultaneously for horticulture depending upon the availability of such lands in the Juang village. The idea behind this process is that ultimately only first year taila cultivation will be stopped in course of five years. First year taila will be restricted to that category of land having slope from 8 per cent to 12 per cent only.

4) In order to control the second year taila cultivation alternate sites for permanent cultivation should be developed simultaneously. These sites are available in flat valley-bottoms and within gentle slope area having 3 to 8 per cent slope. The valley-bottom should be reclaimed immediately and distributed among the tribals. Those farmers who are willing to give up second year taila cultivation are eligible to own land in valley-bottom and should be given all help to carry out cultivation.

5) Terraced fields also can be developed in the land having 3 to 8 per cent

slope. The greatest handicap in this regard is the heavy financial investment. Even if the financial problem is solved by providing hundred per cent subsidy to the tribals, the terracing has another problem. It is a time consuming process. A tribal cannot wait for two to three years until he gets return from such lands. In such a situation our recommendation is that the government should develop the terraced fields without insisting on people's participation and distribute them among the beneficiaries as and when the terraced fields are ready for cultivation. This scheme of terracing should be taken up at a later stage of development when the tribals have already given up second year taila land cultivation and started wet cultivation in the valley-bottom in a full fledged manner.

6) Land having above 20 per cent slope may be utilized for development of forest and for pasturage.

7) The tribals should be provided with muzzle loading guns to protect the crops from the depredation of wild animals. Otherwise, all attempts at improving agricultural practices as recommended above will be futile. It may be mentioned that years back the whole crop of Taichung paddy grown in valley-bottom by the Juangs of Kadalibadi village was destroyed by elephants; no assistance was provided to them to keep these animals in check. They tried their best to protect their crop by whatever indigenous devices they had at their command. But when they failed in their attempts they had nothing more to do but to keep quiet and bear the loss of the crop.

8) Cultivation of hill-tops should be banned forthwith, because it causes degeneration of forest and soil erosion. These hill-tops should be taken up for afforestation. We feel that the tribals will not put up any resistance against the proposal of developing Reserved Forest at the hill-top. This work should be taken up by the Forest Department and the tribals should be involved in the process from the very beginning so that they would take interest in protecting it.

THE PODU PREVENTION PROGRAMME

In the meantime, the Government of Orissa in the Harijan & Tribal Welfare Department, has launched a massive programme under Environmental Protection and Ecological improvement to control shifting cultivation. A comprehensive five year programme for prevention of shifting cultivation has been launched since 1987-88, with the assistance of the Ministry of Agriculture, Government of India. Ten Area-Specific Projects covering about 6,181

Water Harvesting Structure at Biyapandadhar,
a Bhuinya village in Bhuinyapirh, Keonjhar District

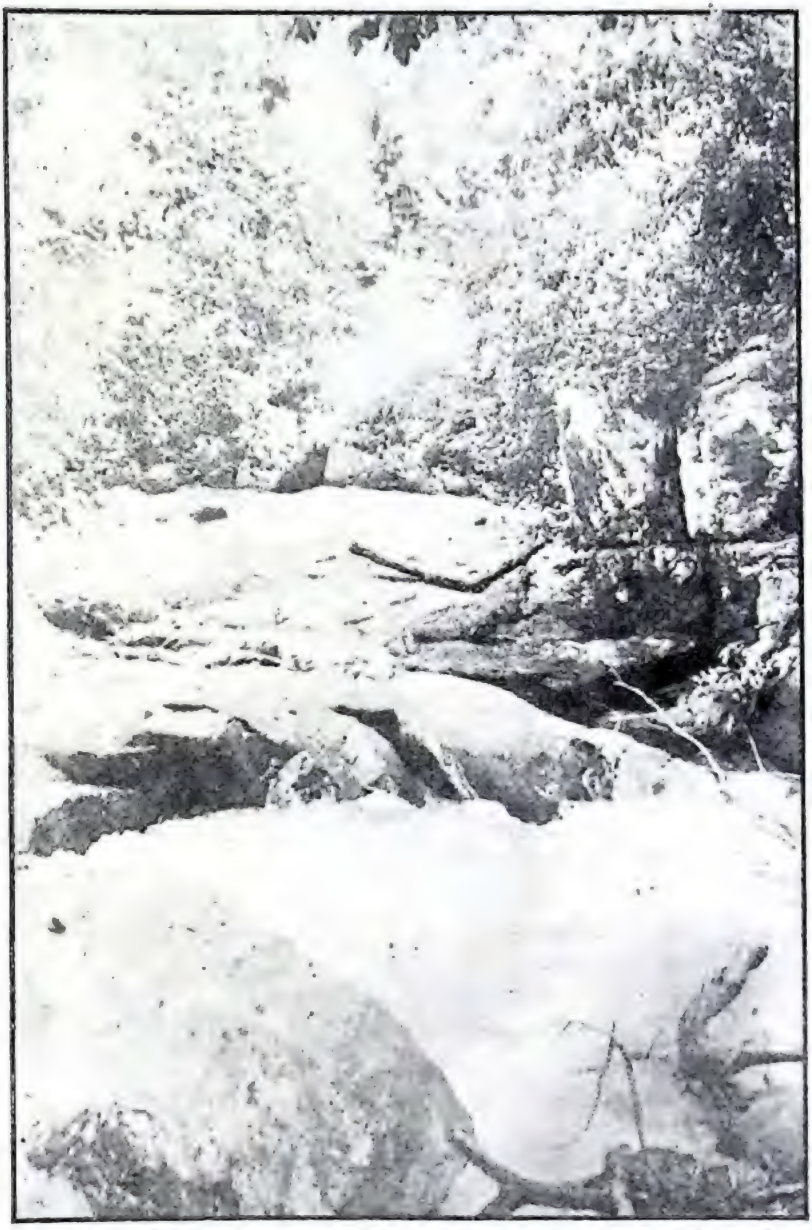
families in the Scheduled Areas of 7 ITDAs spread in 6 districts have been formulated at a total cost of Rs. 17 crore for implementation within a five year period upto 1991-92. The Statement-I gives the project wise allocation of funds and utilization of funds upto March 91.

Banspal block of Keonjhar district and Mohana block of Ganjam district, which I visited to review the progress of work, are included in this programme. Basic data concerning Banspal project are provided in Statement II. The schemes provide an integrated package for improvement of the eco-system, rehabilitation of degraded lands, provisions of necessary inputs for increasing the productivity of settled agriculture as well as employment opportunities for poverty alleviation. Sector-wise expenditure on various items in Banspal area is provided in Statement III.

CASE STUDY : BANSPAL BLOCK (JUANGPIRH & BHUINYAPIRH)

Water harvesting structure

The water harvesting structure at Biyapandadhar, a Bhuinya village situated by the side of NH 6 at a distance of about 17 kms from Keonjhar town is almost ready to function. It has an ayacut area of 40 acres which belong to the Bhuinyas of the village. The people of the village were employed in earth work



Water Harvesting Structure across Baitarani river near Gonasika, a Juang village in Juangpirh of Keonjhar District

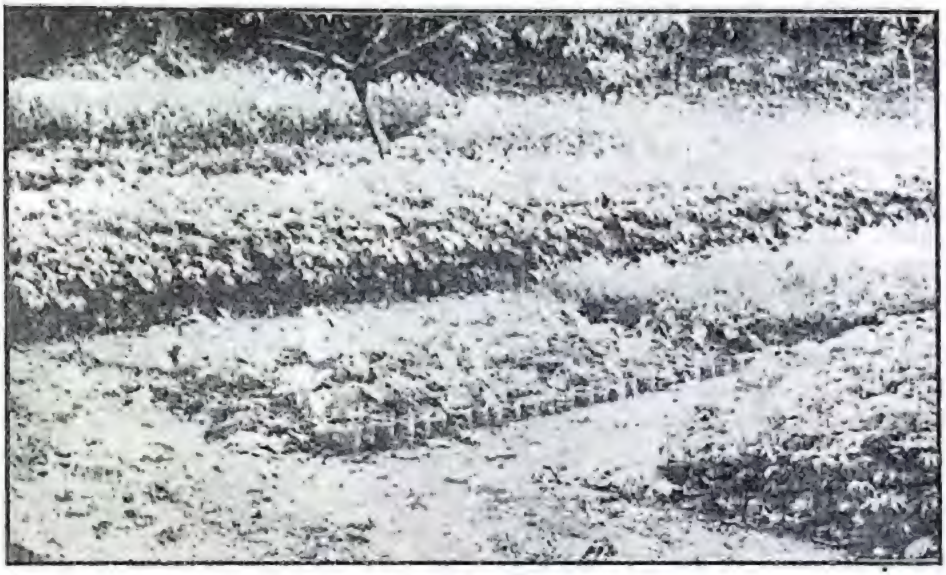
of the dam and diversion weir as day labourers on payment of Rs. 25/- per day and are eager to utilize the water from the reservoir for irrigating their lands and raising two crops annually.

The water harvesting structure which has been constructed at a place called Bhagabantra near Gonasika village, a Juang village in the heart of the Juang country is already functioning. It is constructed on the river Baitarani and will supply water throughout the year. It has an ayacut area of 40 acres which are already under paddy cultivation by the Juangs of Gonasika and two other neighbouring Juang villages. The whole area was being barren till last year. All these lands are in the plains and the Juangs have private ownership over these lands.

Sabai plantation *(Eulaleopsis binate)*, an innovation, has been taken up in an area of 10 acres at a place called Mundala under the National Watershed Management Programme. The local ladies were trained and employed in this scheme as wage earners for planting the grass. The area under plantation was very badly eroded and in order to check further erosion Sabai grass is being planted across the contour line. Sabai grass is used for making ropes which are used for various purposes. It is extensively grown in Mayurbhanj district and it is one of the primary sources of livelihood of many Santal families who have developed a great skill in manufacturing Sabai ropes. Plantation of Sabai grass in Keonjhar district is an innovation and the Juangs and the Bhuinyas are not habituated to the works of rope making. It may take time for their adoption; but apart from the human and cultural factors the climatic condition must be favourable for the growth of the Sabai grass in the Juang terrain.

Sisal plantation (Agave Sisalenae) has been taken up at Gonasika covering an area of 105 acres in degraded foot-hills. In the current year, that is, 1991-92, 150 acres more will be brought under such plantation. The plan is to set up a machine and process the plants for the extraction of fibres, which are very strong and are used for making ropes. This is also another innovation in which the local tribals are employed as day labourers in various works of plantation. The local tribals have no previous experience in Sisal plantation and it is to be seen how this innovation will get through for its adoption by the people.

At Kuanr, a Bhuinya village close to Kanjipani, a central place on NH 6 at a distance of about 20 kms from Keonjhar town there is a horticultural garden stretched over an area of 350 acres of land. Various kinds of fruit trees and plants such as banana, guava, papaya, pine apple, jackfruit, mango, etc., have been planted and the fruits of this garden are marketed through local traders and businessmen. Grafts and suckers and seedlings are being supplied to other nurseries and local people. The Department of Agriculture has taken



Nursery at Kuanr —
a Bhuinya village near Kanjipani, Bhuinyapirh, Keonjhar District

Pineapple plantation as a podu prevention measure,
Juangpirh, Keonjhar District

up plantation for the first time of pine apple suckers in a patch of land of about 10 acres by the side of a hill stream in Gonasika village. A batch of Juang ladies has been trained in pine apple plantation and employed on wage basis in the work. Plantation of pine apple in the lands of the Juangs and Bhuinyas is an innovation, even though the farms at Kuanr using suckers is near at hand.

REGIONAL PLANNING : CENTRAL PLACE APPROACH

48 villages are included in the special podu control scheme. The Statement IV (Annexure VIII) gives the list of villages. Something or other has been implemented in each and every village. The villages are scattered in a vast hilly terrain and regular contact and supervision of work as and when required is not possible. Instead of diluting the limited funds and efforts by taking up every village individually as the unit of planning and operation a cluster of villages would be most desirable. The lowest level planning unit with a small group of villages within its hinterland and a central village as its focal point

SALT-1 experiment in a podu ravaged hill-slope at Tangarapada, Keonjhar District

and with functional interlinkages with other central places should be ideal for planning development at the grass-root level. A detailed excercise in this regard has already gone into this area whereby the central places have already been identified and the hinterlands or the service areas with dependent villages of each of the central places have already been delineated. The Statement V gives the central places and the hinterland villages, covering all the 48 villages. It is now to be considered to invest whatever resources are allotted in these central places, thus enabling them to generate growth in their respective hinterland villages. This approach of central place will not only stimulate growth but also correct intervillage imbalance in growth and development and minimise wastage in money and effort caused by unplanned investment.

THE SAORA OF GANJAM AND THEIR DEVELOPMENT

PHYSICAL AND CULTURAL SETTINGS

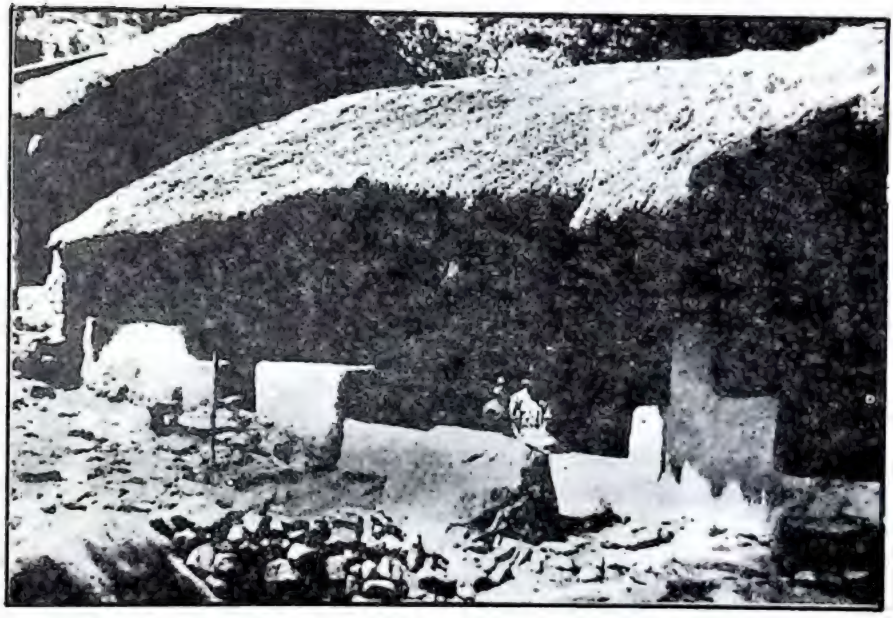
The Saoras are one of the oldest known tribes of India. According to the 1981 census their population was 3,70,060 in Orissa. They are found in all the 13 districts of the State, but they are in great compactness in Ganjam and Koraput districts. The tribe is divided into several subsections such as the Lanjia Saora, the primitive section, the Kindal Saora, the basket making section, the Arsi Saora, the weaving section and the Jati Saora, the hinduized Saoras, of Ramgiri Udayagiri Tahsil in Parlakimedi sub-division of Ganjam district, who have specialized in orange plantation. Extensive orange orchards are found scattered in all places in the Mahendragiri hill ranges which nurture these indigenous horticulturists.

The Saoras in general are more docile and timid than the Khonds and far less addicted to liquor. There is absolutely no habit of drinking among the Hinduized section of the tribe. They do not celebrate buffalo sacrifice as the Khonds do. They are much more labourious than the Khonds and are careful cultivators skilled in contour bunding, revetment and terracing and horticulture, particularly orange plantation.

Ramgiri Udayagiri falls to the South-Western hill region of Eastern Ghats. This region which has the highest peaks in the State comprises wide - open plateous fringed by forests and hills. Outstanding among them are the Singaraju and Mahendragiri hill ranges, rising to about 1490 metres in height. The area enjoys a cool climate throughout the year. It becomes colder in the winter months, the temperature falling to about 13°C in December-January. The mean annual rainfall is 150 cm, varying from 130 cm to 165 cm.

As an important part of Orissa highlands, Ramgiri Udayagiri was one time thickly forested, but forests have been thinned in some places, and have disappeared in some other places, on account of extensive shifting cultivation. As a result there has been considerable change in the climatic conditions, which is adversely affecting the cropping pattern and horticultural plantation. High altitude, good drainage, and duration of low temperature period have favoured the growth of orange in Parlakimedi subdivision to which Ramgiri Udayagiri belongs.

A Lanjia Saora of Angada, Ganjam District



A Lanjia Saora house, Angada, Ganjam District

Agriculture

The Saoras practise three kinds of cultivation in the little gardens of homestead land near their houses, on their terraces and dry lands, and in the swiddens on the hill-slopes and hill-tops.

Saoras of Parlakemendi sub-division are the best terraced cultivators. The terraced fields in which water flows throughout the year are locally called as *Sarrob* and are exclusively meant for paddy cultivation. The upper terraces which are dry is locally called as *Jyanum* and used for cultivating *Ragi* (elusine corocena) *Biri* (Phaseolus mungo) and *Kulthi* (dolichos biflorus).

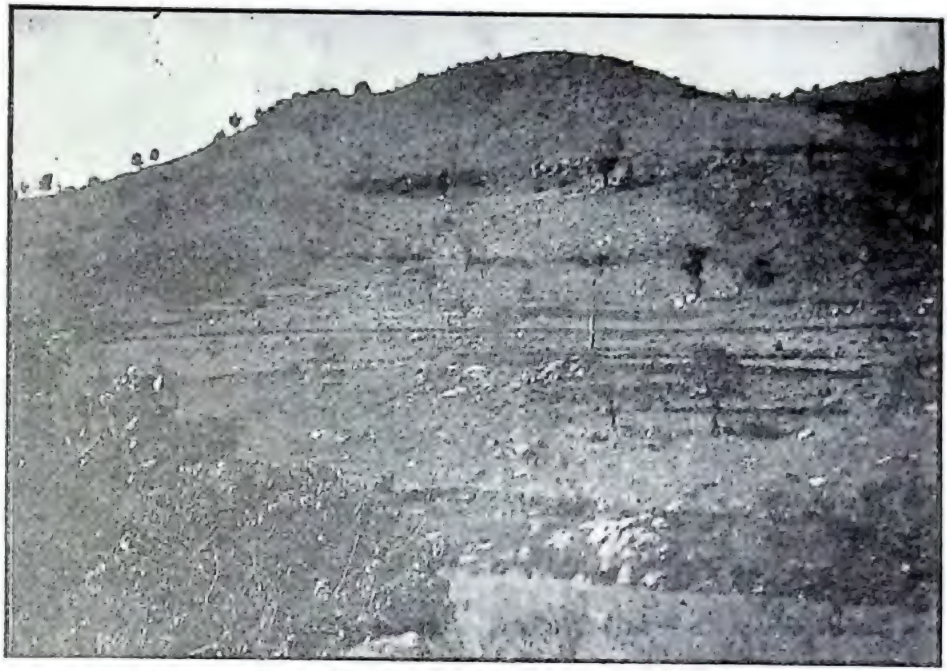
The terraces are built right up the beds of the hill streams and extend many hundreds of feet from the depth of the valleys to the hill-slopes and in some places rising upto the hill-tops. The terraces are works of great engineering skill. The platform of each terrace is flat throughout and the fall of each terrace is stone packed. The construction of the terraces is so ingeneously and skillfully made that no soil is carried down with the water that flows from the higher terraces to the lower.

The water management is equally skillful. The flow of water from one terrace to the other is controlled by channels and water ways which are provided in the ridges of the terraces. There is another way of facilitating flow of water from higher terraces to the lower ones. Two or three pits are dug at the lower side of the upper terrace and these pits are packed with boulders. The water flows into these pits and from there through the boulders trickles to the terrace down below. The water management is so skillful that it avoids flooding of the terraced fields. In many places water trickles level to level through stone facing and ultimately flows down into the lands in the plains. But in no case, neither the soil is carried over with water from the terraced fields, nor any damage is caused to the stone walls.

The terraced fields are privately owned and handed down from father to sons. They are valuable assets to the Saora and sometimes mortgaged to local money and paddy lenders who are mostly of "Pana" Community.

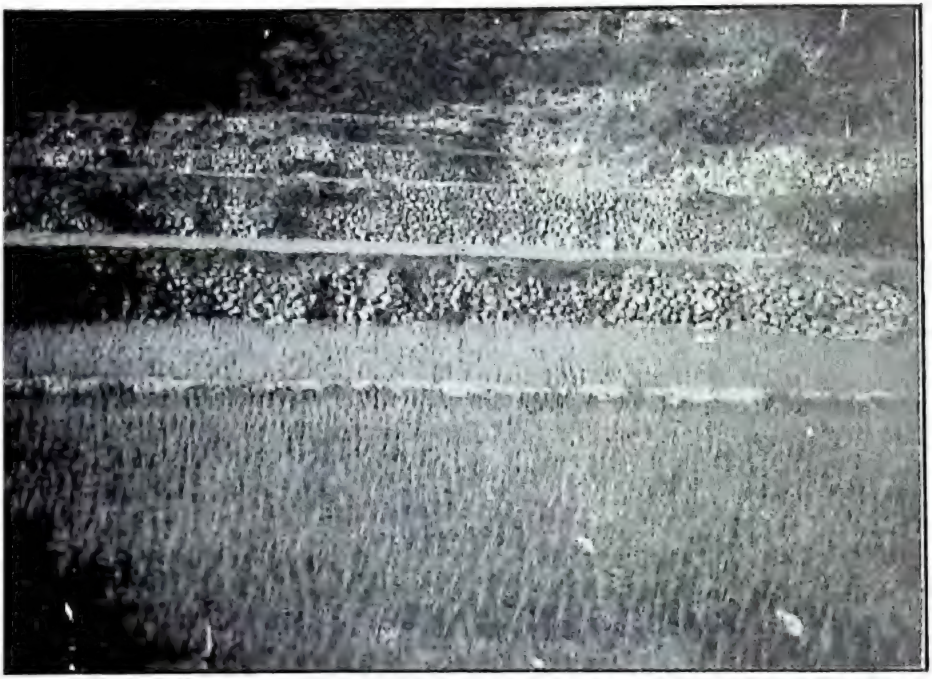
Technique of Cultivation

Paddy : As water is always available paddy is cultivated in terraced fields. Two crops are harvested twice a year. Two varieties of paddy are grown in the terraced fields—early variety called *Amba dhan* and late variety called *Bada dhan*. The different varieties of the paddy grown in the terraced fields are *Ranga dhan, Jaipa dhan, Kunda dhan, Sanagadh dhan, Katangda dhan, Kandula dhan,* and *Amba dhan*. Some progressive farmers among the Saora have taken to cultivation of high yielding varieties of paddy such as Jaya and Ratna and also apply



When shifting cultivation failed terracing came to resque,
Lanjia Saora area, Ganjam District

Terraced plots right from the valley buttom to the hill top,
Lanjia Saora area, Ganjam District



Plantation of paddy on terraces with stone packed wails on contour bunding, Lanjia Saora area, Ganjam District

chemical fertilizers and pesticides which are supplied to them by the block. As all people do not have terraced fields large-scale adoption of improved agricultural practices is not possible at present.

The Saoras start ploughing after the harvesting is over either in May-June or in November-December and the fields are ploughed more than once. Thereafter they apply cowdung manure and plough it under and puddle the soil thoroughly. They then transplant the seedlings and after sometime take up weeding and regulate flow of water through irrigated channels. Harvesting is the last activity of the series of agricultural operations carried out in the terraced fields. Threshing of paddy is done in the courtyard in front of one's own house.

Ragi is cultivated in dry fields. No manure is applied in these fields. The transplantation of ragi starts after the first shower of rain and weeding and harvesting in the months of July and October respectively.

The Saoras grow pumpkin, cucumber, bean, pineapple, tobacco, maize and ginger in kitchen garden.

TABLE 4

Monthly calendar of Agricultural Activities with associated rituals

Sl. No.	Saora Month	English equivalent	Activities connected with terraced cultivation and uplands	Activities connected with shifting cultivation	Other Activities
1	2	3	4	5	6
1.	GALANBURUGAE (Harvesting of KANDULA and JANA	January	Harvesting Kolthi from uplands, sowing Amba dhan in terraced fields.	Harvesting Kandula and Jana. New Kandual eating ceremony (RAGON ABDUR)	
2.	NIVAGAE (Carrying fire wood home from swiddens and collecting Mohua)	February	Transplanting Amba dhan.	Harvesting Kandula	Marketing pulses Negotiating marriage, collecting Mohua.
3.	ARIAMDURGAE (Forest clearing and firing)	March	Weeding	Forest clearing and firing combustible matter, Forest-clearing and firing ceremony (Koriya)	Repairing agricultural implements, collecting Mohua.
4.	GUSANGGAE (Dibbling of Kandula)	April	Repairing gaps in fencing around terraced fields.	Forest-clearing and firing, dibbling Kandula, harvesting Turmeric.	Collecting tamarind, Mohua, Marketing forest produce Mango eating ceremony (UDAN ABDUR)
5.	LALAGAE (Hoeing)	May	Ploughing, Harvesting Amba dhan, sowing ragi in uplands.	Dibbling Kandula, hoeing swiddens, sowing ghantia, ganga, kangua, jana, bunibudi, jhudunga.	Collecting harada, samatila and arrangada leaves.

1	2	3	4	5	6
6.	PUJING GAE (Weeding) or GUSI GAE (Transplanta-tion of Ragi)	June	Ploughing, Transplanting Ragi in uplands	Weeding, Weeding ceremony (GONAION ABDUR)	Pineapple reaping, collecting leaves.
7.	GUSAI GAE (Transplantation of Ragi)	July	Transplanting Ragi Raising seedlings of paddy on seed bed.	Weeding	Vegetables growing in kitchen garden
8.	GUSAR GAE (Transplantation of paddy	August	Transplanting paddy	Weeding	
9.	TISAR GAE (Weeding)	September	Weeding	Watching crops, Harvesting Kangu and Suan.	Collecting mushroom & tender bamboo shoots.
10.	GOPAL GAE (Weeding)	October	Weeding, Harvesting Ragi.	Weeding, watching crops, harvesting Kangu	Collecting mushroom and tender bamboo shoots.
11.	GAJING GAE (Forest-clearing) or GANGA GAE (Harvesting of GANGA)	November	Harvesting Biri from dry fields and paddy from terraced fields, Shaman's ceremonial eating of rice (LAJAP)	Forest-clearing, Harvesting Ghantias, Ganga, watching crops.	
12.	TIMBIR GAE (Forest-clearing) or GAGAG GAE (Ripening of paddy)	December	Harvesting paddy, pre-paring seed bed for Amba dhan, sowing Amba dhan, Ploughing and Manuring terraced fields.	Forest-clearing, Harvesting Ganga, Jhudunga, Burubudi.	Collecting Bhalia (edible fruit) from forests.

Rituals Associated with Terraced Cultivation

The Saoras observe certain rituals in connection with terraced cultivation. The principal one is connected with transplantation. Before the seedlings are pulled up for transplantation, a ritual is performed in the seed bed. On this occasion dried fish and fowl are offered to a deity called *Jatra*. The belief is that the deity will be pleased and protect the plants from pests and ensure a good harvest.

Cooperative Labour : (Ansir)

The Saoras perform all agricultural activities on a cooperative basis. According to this system which is called Ansir the villagers work on one another's land on the basis of reciprocity and mutuality of obligation. No payment of wage is involved in this system. But food is provided to the workers by the person on whose land they work. This is being replaced gradually by payment of wage in cash under the impact of monetized economy. A sense of possessiveness and acquisitiveness has developed in some farmers, and in their hands wealth, in the form of land and money, has accumulated. These affluent Saoras manage their agriculture by employing hired labour.

It will be observed from Table-4 that the months of July, August and September are named according to the principal activities connected with terraced and dry upland cultivation where as the remaining 9 months according to the principal activities connected with shifting cultivation. From the point of view of shifting cultivation the former three months are not so important as the latter 9 months are. Among the Saoras months are denoted not by lunar and climatic calendar but by the agricultural activities.

Cattle and Livestock

The Saora domesticate cattle, buffalo, pig, poultry and duck. The cows, bullocks and buffaloes are used as draught animal and in payment of bride price. On ritual occasions they serve as sacrificial animals. The Saora of advanced section drink milk, and on festive occasions pigs, fowls and ducks are killed for meat.

Shifting Cultivation

In addition to wet or terraced cultivation the Saora practise shifting cultivation quite extensively. The shifting cultivation is known by the term *Bagada chasa* among the Saora and each and every family has a few patches of swiddens either in the hill-slopes or at the hill-tops yielding mainly minor millets and pulses.

Among the Saoras the swiddens are owned individually and are handed down on heriditary basis. They conceive of themselves not as belonging to their ancestral swiddens but rather as owning them in their attitude. The land itself, the timber and fruit trees, and game animals are as dear as life to the Saoras. Generally speaking the focal point of all activities in the Saora society is land and the root cause of Saora fitury is land alienation.

Every Saora village has a well defined boundary and its inhabitants carry on shifting cultivation in the hills located within the village boundary. Some hills are close to the village and others at a distance. Traditionally the hills were distributed on the basis of Birinda or extended family. Members of a particular Birinda used to have swiddens exclusively in a hill and no outsider was allowed to share the hill for shifting cultivation. But with the increase in population and outmigration there has been some change noticed in this pattern. Today cases of outsiders cultivating hills belonging to a Birinda other than their own are not unknown.

Techniques of Shifting Cultivation

Forest Clearing

Shifting cultivation starts with the work of forest clearing which begins in November and continues till the end of December. In this work women cut down the undergrowths and low thickets with the help of sickels and men cut down the trees and creepers by axes. After the trees are felled the women chop them into small pieces and pile them with combustible matter in several heaps in the swiddens. The Saora do not cut the trees flush with the ground. Their practice is to cut the trees high above the ground. It is done so because the coppice growth from the stools give them tender leaves which they eat by cooking with ragi or rice, their staple food. During forest-clearing they spare the trees called *Barada, Aranadli* and *Karki* which also provide edible leaves. They also cause no damage to the creeper plants called *Samatila* which also give them edible leaves.

Firing

The felled trees and creepers are left for three months to dry and in the month of March they are set on fire. Firing is done by men. No sacred fire is used for this purpose. Either a match stick or a lighted branch or twig serves the purpose.

The Saora start sowing in the month of April by dibbling Kandula (cajnus cajan-red gram) in the holes made in rows by means of a dibble. After the red grams have sprouted a mixture of seeds such as Kangu (barai minor millet), jana (Kambur-Sorghum vulgare), ganga (ganga-minor millet), ghantia (Kurei-

minor millet), Jhudunga (Kandran - a kind of bean) and the swidden is hoed to cover the seeds under and to get the ashes mixed up with the soil. The hoeing is done by means of a hoe by both men and women. Hoe is a forked piece of wood tipped with a pointed iron.

Weeding

Weeding begins in June and is done by women with the help of knife (Kadati) made of iron.

Watching

From the month of August to January both men and women guard the crops grown in the swiddens against the inroads of wild animals such as wild boars (Kandring Jail), Percupine (Kajang), Peacock (Mira), Bear (Salu) and Jungle fowl (Kandring Im). For this purpose they erect temporary field huts called *Tuku* in some convenient position in the swiddens and spend most of their time in these places watching the crops and scaring away the animals and birds by the beat of drums. At night one can see the hill-side dotted with fire and hear the sweet music of the flutes and the thorb of the drums.

Harvesting

In August crops like, kangu, small ganga are ready for harvesting. The Saora harvest kangu by removing the ears of the crops with a knife and carry them home where they thresh them with their feet. But they cut the ganga plants from above the ground and thresh them with the help of bullocks.

In November crops like ganga, ghantia, burubudi and Jhudanga are ready for harvesting. The Saora remove the ears of ghantia with the help of a knife and thresh them by beating the ears with a stick. Burubudi and Jhudanga are plucked by hand and then dried to take out the seeds by beating them with a stick. Jana and Kandula plants serve as stalks for the creeper plants of Burubudi and Jhudunga. Jana is harvested in the month of December. The Saora dry them in the threshing floor and thresh them by beating with a stick. In January Kandula is harvested by pulling the pods off the shrubs into baskets and threshed with sticks. A monthly calendar of agricultural activities concerning both terraced and shifting cultivation is given in Table 4.

One of the important cash crops of the Saora is turmeric which is grown in swiddens. It takes two years to be harvested and does not interfere with the growth of other crops. It grows well in the soil which is sufficiently loosened by hoeing. A swidden is cultivated for two or three years after which it is left

fallow for a period of 6 to 8 years. The Saora donot grow all kinds of crops in all these years. For example, they choose to grow burubudi and jhudunga in preference to ghantia in the first year. Similarly they do not grow all crops in equal quantity in all the years. For instance, jana and kandula are not grown in the same extent. It is the experience of the Saoras that both of them hinder each other's growth. That is why one is grown more extensively than the other in a year and the extent of cultivation of these crops is reversed next year.

Storing

The Saora follow different methods for storing different types of seeds. They store the seeds of burubudi and jhudunga in a new earthen vessel, whose mouth is tied with a piece of cloth tightly so that no insect does any harm to the seeds. But they store the seeds of Kangu, Ganga, Jana and Kandula in bamboo baskets which are sealed with straw plastered with mud.

Rituals Associated with Shifting Cultivation

Several ceremonies are performed in connection with shifting cultivation. A ceremony is performed on the day of sowing. Before the seeds are mixed and sown, broadcast the village *Buyya* and *Kudan* worship the hill-gods by offering them liquor and by sacrificing fowl and goat. They worship the Goddess Laxmi called Sita by offering liquor and by sacrificing fowl. A small ritual which involves the offering of either a fowl or a goat to the hill-god called Barusim is observed towards the end of August after the Kangu is harvested. The next ceremony follows before the Jana is threshed and Kandula is harvested. On this occasion fowls are offered to the hill-gods. The Saora believe that if these ceremonies are performed they will get good crop from the swiddens.

Food

The principal food of the Saora is gruel (Pej) prepared out of rice or ragi or jana or ghantia. Besides, they take vegetables grown in kitchen gardens and fruits, roots, leaves, tubers and honey collected from forests.

The non-vegetarian food is much more relished than the vegetarian diet and no festival is observed and no guest is entertained without non-vegetarian food.

A list of food items with methods of processing and preparation is given below :

TABLE 5

Food Items

No.	Name of major food items.	Varieties of major items	Cooked items
1.	Cereals and millets	Rice, Ragi, Jana, Kangu, Ghantia, Ganga.	Gruel is prepared by boiling these cereals and millets in water separately or mixed together. Salt is added for taste.
2.	Pulses	Kandula, Jhudunga, Kulthi, Barugudi.	Dal or curry is prepared by boiling these pulses separately in water with a little salt and turmeric.
3.	Vegetables	Plantatin, Pumpkin, Potato, Papaya.	i) Curry is prepared by boiling these vegetables in water with salt and turmeric ii) Ripe papaya is also taken.
4.	Fruits	Mango, Jackfruit, Orange, Guava, Blackberry, Khajuri, Tamarind, Pineapple, Coconut, Lemon.	Curry is prepared out of jack-fruit when it is unripe by boiling with salt and turmeric.
5.	Leaves	Kara, Samatila, Urbangada, Baradap, Sabalang, Arrongoda, Susunap.	These green leaves are dried and powdered and added to the gruel.
6.	Mushrooms	Different varieties of Chhatu.	Dried and powdered and boiled in water with salt.
7.	Salap	Salap powder	After removing the bark it is cut into pieces and after being dried these cut pieces are powdered and used for preparing gruel.
8.	Non-Vegetarian food (meat)	Meat of buffalo, hare, deer, rat, rabbit, goat, fowl, duck, etc.	Meat is boiled in water with salt and turmeric and curry is prepared and spices are added for taste.
9.	Fish	Fish and dried fish.	Curry is prepared by boiling fish or dried fish in water with salt and turmeric.

Drink and Other Stimulants

Of all the alcoholic drinks salap liquor is the favourite. Mohua liquor and rice beer come next in importance. Both men and women, irrespective of age, drink salap liquor. No ceremony, social or ritual, is observed without liquor.

The Saora are inveterate smokers. They roll some tobacco in a piece of dried sal leaf and smoke it.

THE SAORA AND ORANGE PLANTATION

Subalda, a Saora village where the orange plantation was studied, lies 5 kms to the South of Ramgiri, an important business centre and seat of some village level officials like Revenue Inspector, Junior Engineer, PWD, Dispensary, and branch Post Office. There is a High School run by H. & T.W. Department and a High Density Progency Orchard established by Horticulture Department. Ramgiri is on the bus route along which buses ply between Parlakhimedi 60 kms to the South and Berhampur 130 kms to the North of this business centre.

The Ramgiri Orange Growers Marketing Cooperative Society registered under Society's Act in the year 1975 is located at Ramgiri. It covers three Gram Panchayats of R. Udayagiri Block. The Panchayats are Ramgiri, Mangarajpur and Tabarsing. Table 6 gives the panchayat wise households, orange growers and membership in the Cooperative Society.

TABLE 6

Panchayats	House holds	Population ST	SC	Others	Total	Orange Growers	Members enrolled in Coop. Society
Ramgiri	622	1639	59	1167	2865	69	10
Mangarajpur	793	3604	13	81	3698	417	376
Tabarsing	439	1801	143	168	2112	20	20
Total	1854	7044	215	1416	8675	506	406

Of the 23 villages included in the Society, Subalda is one and one Balaram Badamunde a progressive orange grower functions as the Director of the Society of which Prasana Kumar Das is the President.

Seedling of orange plants on seed beds at Ramgiri, Ganjam District

Orange plants grown in hill-slopes with banana and other crops as interculture in Mahendragiri hills, Ganjam District

Improved Techniques of Orange Plantation

In order to introduce improved horticultural practices the horticulturists contacted the orange growers and told them how the orange plantation could be improved. Some of the practical hints and methods of plantation advocated and canvased by the expert are mentioned below. This section is followed by the study of cases which show traditional practices as followed by the growers disregarding completely the improved techniques of plantation as suggested by the horticulturists.

Considering the importance of orange plantation in the Ramgiri area, a horticulture farm was established at Ramgiri, and later it was upgraded to a High Density Progency Orchard covering an area of 4.5 hectares. It is located by the side of the Berhampur - Parlakimedi road. An overseer is in charge of the farm, and he is assisted by two grafters and two field assistants. With financial assistance from such sources as the ITDA, Special Central Assistance, N.R.E.P. plantations of guava, pomogranate, mango, etc. have been undertaken on lands owned by the beneficiaries. Seedlings of orange plants raised in the farm are supplied to the orange growers. Previously the growers were also given Re. 1/- per plant in the first year, and Re. 0.50 paise in the second and third year towards maintenance. In fact, this amount was deposited in the post office in the name of the beneficiaries and it was released as and when required taking into consideration the progress of work. This scheme has been dropped after 1981.

CASE STUDIES ON ORANGE PLANTATIONS

Case 1. Balaram Badamunde - 45 years old, Village : Subalda

The orange plantation was started first in his village Subalda by a man Golia Badamunde by name, who died 11 years back at the age of 120 years. When he was about 25 to 30 years old he had a chance to come across orange trees grown near about Loba, a big Saora village located at a distance of 15 kms further South of his village. He collected some seedlings and planted them in his swidden fields in the hill-slope. The seedlings grew and the plants bore fruits as expected. Since that time on he had carried on several experiments and tried several ways to ensure greater longivity, disease free and healthy growth and better yield. In a few years he became well known in the area and many people of the neighbouring villages started orange plantation by taking seedlings from Golia Badamunde. Ultimately his village became a centre of dispersal, from which Orange plantation spread widely in its hinterland villages.

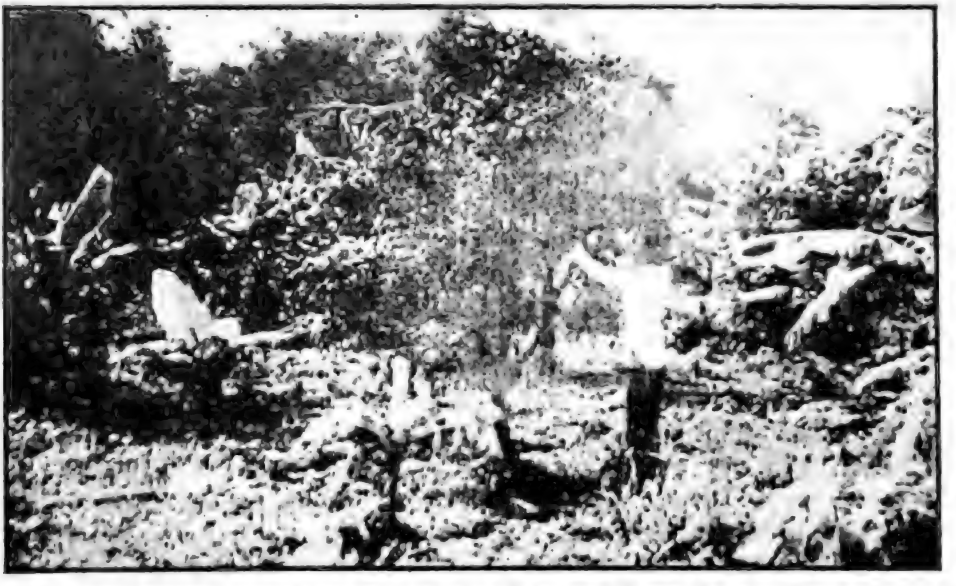
Balaram Badamunde is one of the grandsons of Golia Badamunde and the knowledge about the plantation has been handed down from one

generation to the next, with very little change in the techniques. What he has learnt from his grandfather is narrated below.

His grandfather brought seedlings from Loba when he was in the prime of his youth and planted them in Kantisila hills located at some distance from the village. No one was growing orange plants before in the village. The orange plants were present in the Mahendragiri hills and from those places it spread to Loba and then to Fuka, a village located at a distance of about 10 kms from Subalda.

He did not remember when exactly the plants were brought by his grandfather. By 1960, he remembers, that there were about 3000 to 4000 orange trees in his grandfather's orchard. At that time the cost of 100 oranges was only Rs. 25, and there was no demand for oranges. The local businessmen of Domb community used to visit the villages when the fruits were ripe and bought them from the growers by auction method at wholesale rate for the whole orchard. They used to sell oranges at a higher price in different market centres.

His grandfather had told him that the seedlings should be planted keeping about 15 feet of space in between two plants. They should be planted at the edge of the stone packed wall of the terrace so that the decomposed matter and litter flowing from higher side of the slope be deposited at the base of the plants and help them to grow well. The soil in the slope was not to be disturbed and the shady trees present in the slope were not to be cut. No other



An orange tree laden with oranges, Subalda Village, Ganjam District

manure except the humus which gets deposited around the plants at the base need be applied.

His grandfather told him that ginger and turmeric could be grown in the orchard so that the crops would be ready for use in two years and the leaves would get decomposed adding fertility to the soil. Minor millets like ganga and suan could also be grown as a part of interculture in the orange orchard.

As regards preparation of seedlings his grandfather said that the seeds would be taken out from well ripened fruits in the month of December and dried in the sun. When the reddish coat is vanished the seeds are ready for dibbling. The seed bed should be prepared close to the hill stream and dried manure and water sprinkled over the bed. When the seedlings attain full growth to a height of one feet they would be taken out of the seed bed and planted in the hill slope.

Golia had told him that the only disease which would affect the fruits is called "Machhimara" (fruit borer). To save the fruits from this disease a pot full of water mixed with mollases should be kept in different places in the orchard. The insects would get attracted and fall into this water and get killed.

Balaram had grown in 1977, 200-300 plants out of own seedlings in an area of about 3 acres in the Kantisila hills. There were also some old plants which were planted by his grandfather and continue giving fruits. One of such plants which would be almost of 60 years old has borne a heavy load of fruits of more than 2500 in number. It has still a luxuriant growth except a few stem parasites which have grown on various branches. It stands alone in the middle of a hill-slope which is used for growing turmeric.

In the month of Baisakha (April-May) and Jesta (May-June) some minor millets and cereals such as ragi, suan, and ganga were sown broadcast in the hill-slopes where the orange seedlings were planted, after the soil was worked by means of a spade. Interculture was done for a period of three years.

The first time plants, which were grown in 1977, bore fruits was in 1982. He auctioned the fruits to a local Domb businessman, Ghasi Domb by name at a wholesale rate of Rs. 700. In 1983 he harvested about 10,000 oranges which he sold in his village and got Rs. 2,000 at the rate of Rs. 20 per 100 fruits. In 1984 he got about 15,000 fruits and sold them to a businessman at Rs. 4,000. In 1985 the yield got diminished and the sale proceeds did not exceed Rs. 3,000. This time he sold the crop to his son-in-law, Kishore Pradhan by name. The reason for the diminished yield was that there was no rain and there was intense heat which caused the flowers to fall off. Even then there were about 10,000 fruits. In 1986 he got an increased yield of about 20,000 fruits which fetched him about

Rs. 7,000. One Kota Amin, a Domb merchant of his village bought the fruits this year from him.

Some of the plants have started dying for reasons not known to him. According to the technicians it is a kind of disease called die back, the remedy of which is to cut the affected branches and throw them away.

He planted some seedlings in two other hills - one is called Kubisahi hill where 1000 seedlings were planted, and the other called Barama hill where another 1000 seedlings were planted. By the year 1986 the plants started bearing fruit. For three years, sufficient yields were harvested from these two orchards. But after 3 to 4 years the trees suffered from die back and died in large number in Kubisahi hills. But the plants raised in Barama hills continued to yield fruits sufficiently till the year 1989. Last year the trees were affected by a disease locally known as 'Panduroga' (technically called canker) which caused the flowers to fall off and therefore the yield got diminished.

The seedlings which were planted in these hills were supplied by a horticulturist from the High Density Progeny Orchard at Ramgiri. Urea and Teramil which were also supplied were applied. In spite of all precautions the trees were affected by die back and canker diseases. The horticulturist of the Progeny Orchard came to see the plants and sprayed them. Thereby some plants were saved, and he got fruits from about 400 trees.

He has an orchard in another hill, called Kalamba hill, where there are about 300 orange trees. He grew them in 1985 and the seedlings which were planted there were all supplied by the horticulturist of Ramgiri Progency Orchard. Fertilizer and pesticide were also supplied and were applied as instructed by the horticulturist. His experience was that the plants grew luxuriantly, but the vegetative growth did not help the plants to live longer. These plants gave fruits in sufficient quantity for 4 to 5 years after which the yield got diminished and finally the plants died in a short time.

There are 40 orange trees which were planted by his grandfather in Kantisila and Kubisahi hills. These trees would be about 50 years old and each tree yields about 200 oranges. Last year he got an amount of Rs. 2,000 by selling fruts only from two trees. They continue to yield fruits unaffected by any such diseases which afflict the plants supplied from the Progeny Orchard.

He remembers what once his grandfather said about the plants of improved variety. A horticulturist met him once and asked him to use seedlings which were raised scientifically with the application of improved horticultural practices in the Nurseries and Progeny Orchard. The old man did not accept his advice and said "as a foreigner can not thrive in our villages

similarly the plants brought up under different conditions cannot survive in the local conditions. These so called improved plants become sickly when they are planted in the hills."

As regards marketing, he used to dispose of his produce by auctioning his orchard to known local Domb traders. Sometimes he sold the oranges himself, either in the locality or by transporting the produce to Berhampur. In 1986 he hired a minitruck by paying a hire charge of Rs. 700/-. He sold at the rate of Rs. 120/- to Rs. 130/- per 100 oranges of both large and medium sizes and at Rs. 40/- of small size. Whether he gained any profit or met with loss in his business is not known to him. But he gave up the business and reverted to the old practice of selling the fruits by auction to the Dombs.

He pointed out that the orange growers face serious difficulties in undertaking the business by themselves. The fruits start ripening from the month of October and are ready for sale which goes on till December. This is the period when the crops grown in the swiddens are harvested one after another in quick succession, otherwise the produce gets destroyed.

Swidden cultivation is regarded as the primary source of livelihood in the sense that the crops grown in the swiddens are used for food and not for sale. Even though sufficient cash is earned from the orange business but the people give the harvesting of swidden crops first preference over self involved business in oranges.

It was our observation during our field work in Ramgiri in the month of July in 1991, that the hill-slopes where orange trees have been grown were covered with a thick growth of weeds and shrubs and bushes. Although the trees were found laden with fruits they suffered from malnutrition since the plant nutrients were consumed by the weeds and shrubs. On enquiry why the plants have been left uncared for, the growers said that the month of July and August are the busiest months when paddy is transplanted and weeding is done in the swiddens. Generally the people take up clearing of the orange orchards after the works in paddy fields and swiddens are over.

This is one factor which goes against the proper growth and longivity of the orange plants. Moreover, the fire which is set to the dried matter every year in the summer season causes damage to the plants. The stray goats which are let loose in the forest eat up the leaves causing high mortality of the plants. Added to these hindrances the havoc caused by the monkeys is unmeasurable. As soon as the oranges start ripening the monkeys invade the orchards and eat up the fruits and also destroy them. This is the reason which compels the growers to auction the fruits when they are unripe even though it fetches a much lower price to them.

As pointed out above, even though the orange is a substantial cash crop and the Saoras have earned a name in the State as the skilled orange growers, still they consider shifting cultivation to be their primary occupation. The income of Balaram for the last year reveals the superiority of paddy cultivation and swidden cultivation to orange plantation. The income derived from various sources is mentioned below.

TABLE 7

1.	Sale of Date palm juice	Rs. 3000
2.	Paddy	Rs. 2400
3.	Turmeric	Rs. 3000
4.	Cabbage	Rs. 3000
5.	Rabi paddy	Rs. 960
6.	Orange	Rs. 1000
7.	Niger	Rs. 500
8.	Ginger	Rs. 200
9.	Beans	Rs. 100
10.	Ragi	Rs. 100
11.	Millets	Rs. 80
12.	Pulses	Rs. 75
	Total	Rs. 14,415

Balaram Badamunde was formerly an ordinary member of the Orange Growers' Marketing Cooperative Society. Later he became a member of the Board of Directors. The orange growers used to sell their produce to the Society and get the fair price. The rate was fixed by the Board of Directors in consultation with the growers. The Society was running smoothly and used to give loan to the growers for raising plants and maintaining orchards. The amount of investment in the orange business was increasing year after year. It was to the tune of Rs. 10,000 in 1978-79 and it increased to Rs. 28,450 in 1984-85.

In the years which followed, the Society developed symptoms of disintegration and it has now become almost defunct. The root cause of disintegration was the mischievious character of the supervisor of TDCC who was functioning as the Secretary of the Society. When the growers brought their fruits to the Society for sale he used to check every fruit to see that they were not damaged. Sometimes intentionally he pressed the fruits hard causing damage to the fruits and rejecting them for his own benefit. It was a great loss

to the growers who objected to this mischievious action of the Secretary. Balaram joined hands with other growers and in protest withdrew himself from his membership of the Board of Directors. Disintegration followed after non-cooperation of the members, who ceased to sell their fruits to the Society and cut off all connections with it.

He used to auction his orchard produce at the wholesale rate to the local Domb businessmen who sold the fruits at Tumba and Rayagada market centres. He had also sold the fruits himself by carrying them to places like Surangi and Tumba. One of the Oriya terms for orange is Surangi. The place where oranges are sold in huge quantities came to be known as Surangi. It has become the most important orange market in the Ramgiri area.

His estimation was that an orange tree used to yield about 800 to 1000 fruits. All the 300 plants, except one which was planted in 1954, have died and the one which has survived is not an orange tree but a Narangi one which is laden with about 2000 fruits.

In 1970-71 he had planted about 1600 plants at a place called Champajhar bada. He bought some seedlings and raised some seedlings. These plants have been giving fruits for the last 14 years. He got sale proceeds of Rs. 11,000 by selling oranges last year (1989-90) from 1200 trees. The rates at which he sold were as follows.

Large size per 100	Rs. 70
Medium size per 100	Rs. 35
Small size per 100	Rs. 15

It is clear that a skilled orange grower having thousands of orange trees is still more inclined towards agriculture than towards horticulture.

Case 2. Lochana Mandal - 61 years of age, passed 8th standard : formerly a Primary School Teacher but resigned from service on account of his full time engagement in orange plantation.

His father was not an orange grower. Therefore he had no orange plants from the time of his father. He developed interest in orange plantation and learnt the techniques of growing from Golia Badamunde of Subalda village and by observing plantation in neighbouring villages. For the first time he planted 300 trees in 1954. He used both seeds and seedlings which he purchased from others.

The plants bore fruit after six to seven years by 1960 and 1961 and continued to yield every year for seven to eight years after which they started

withering from the top downwards (symptom of die back disease). The size of the fruits got smaller and also the number of fruits was reduced from year to year.

A Domb businessman Karana Mandal by name of Kekesing village bought all the fruits and transported them in a truck to Berhampur where he sold them. It was his observation that the plants took nearly 12 years to bear maximum fruits and for about 6 years the yield from each plant was of sufficient quantity. First year he had sold fruits which fetched him a sale proceed of Rs. 25,000. Second year it came down to Rs. 22,000. Afterwards the size of the fruits got reduced. It was his estimation that he was getting about 600 to 700 fruits per tree—the minimum and maximum per tree being Rs. 300 and Rs. 700 respectively.

In 1979, he planted 300 new plants at a place called Kumpinali. He got the seedlings from the Progeny farm at Ramgiri. With the plants he was given some financial assistance at the rate of Re. 1/- per plant and 16 bags of Urea and some pesticides to spray. Since last year the plants have started bearing fruits. He expressed himself that the delay in fruition was due to lack of care.

Every year he used to do the weeding and loosening of the soil around the base of the plants, for which he had to spend about Rs. 700. His experience was that with the application of fertilizer the plants had vegetative growth but did not give sufficient amount of fruits, and also took much longer time to bear fruits.

He said that he has orchards at nine places, all located by the side of hill streams in valley bottom and not a single one in the hill-slope. From each orchard he is getting an income which varies from Rs. 8000 to Rs. 12000.

He pointed out the following diseases, using local terms, which affect the growth of the plants and cause death to them.

1. Die back (the branches get dried up from top downwards).
2. Canker (White patches appearing on stem as well as on the outer skin of the fruits).
3. Stem parasite (Malanga).
4. Leaf roller (Patramocha).
5. Fruit borer (Machhibindha).
6. Milibog and mould and mossic.

Orange plants grown on hill-slope which was formerly used for shifting cultivation, Mahendragiri hills, Ganjam District

It was found that many of the plants in his orchards had been affected by such diseases. But he had no knowledge about any remedial measures to protect the plants against pest attacks. Nor had he bothered at any time to consult the horticulturists who used to visit the area at times. He is one orange grower well known in the area for the huge profit he gets out of his orange plantations. He has bought lands in the valleys where he is growing paddy extensively. He has built substantial residential houses and farm houses out of the sale proceeds of the oranges from his own orchards. He is affluent and better off. But he is one, like many other orange growers, who is much against using fertilizers in his orchards. He is as ignorant about pesticides as the illiterate orange frowers are. He has a large family of 7 sons and 4 daughters who have not been given any education. This is a case which shows that improvement in economic condition has not brought about any change in his outlook and educational standard which remain as backward and superstitious as before. And even though horticulture is considerably lucrative, he is oriented and inclined more towards paddy cultivation and growing of millets and cereals.

Problems

The technicians and executives face several problems in their work

concerning introduction of improved practices. Some such problems as expressed by them are listed below.

Problems in Marketing

The following are the most prominent problems faced in marketing the produce from the orchards.

1. Lack of communication from the orchard or village to market site.
2. The Dombs of the area purchase the entire orchard produce for a minimum cost from the tribals sufficiently before the fruits are ripe, the producer does not get the reasonable price for his produce.
3. The producer harvests the fruits at a time. If the produce is not sold, there is every possibilities of the fruits getting rotten.
4. The depredation by the monkeys is a problem. They destroy the fruits.
5. No cold storage or industry for processing.

Problems of the growers

1. Lack of education.
2. Lack of basic knowledge regarding :
   a) Selection of sites
   b) Selection of plants and raising of seedlings.
   c) Planting and after care.
   d) Knowledge in plant protection measures.
   e) Knowledge in manuring.
   f) Maintenance of the orchard.

Problems of Government

The Governments of Orissa and India are implementing some schemes for the development of fruit cultivation. The following are the financing agencies, who implement the schemes through the Department of Horticulture in Orissa.

1. I.T.D.A.
2. D.R.D.A.

The ITDA places funds with the Horticulturists of the Sub-Division to work out the programme and implement it in a limited area.

As the funds are limited and inter crop can not be raised the growers have to wait till the trees bear fruit, that is, for 5 to 6 years of gestation period during which the growers do not get any income from the orchards. So they do not give much attention to their plantation and seek other means to maintain their daily livelihood.

- The tribals of the hill areas depend on shifting cultivation. They grow mixed crops like millets, pulses, etc. in the hill-slopes. Some of them have paddy lands. They depend on mango, tamarind, Mohua flowers, etc. in seasons. As a result they are not able to pay full attention to their orchards.

Problems of Public

1. Lack of cooperation of the farmers. The people of the area do not have good relationship with the growers.
2. As the orchards are auctioned to the Dombs of the local area the public are not able to get the fruits at a reasonable price.
3. As the fruits are not available in plenty in daily or weekly markets, the public fail to get oranges at the markets and therefore get annoyed.

Technical problems

1. Inadequate staff in the farm.
2. Lack of communication to the plantation sites and villages.
3. Inadequate supply of inputs and equipments.

Other problems

1. As the terrain of the citrus growing area is full of hills and streams, the technical staff are not able to reach the growers in time. No cooperative functions in the area. As a result growers fall on easy prey to the local sycophants and cheats.
2. The most serious problem is that the vegetational cover is being gradually depleted resulting in change in climatic conditions. The area is getting warmer and soil erosion has taken place in a large measure. The complaints of the people are that the plants are dying out unexpectedly and the yield is getting diminished. These points truely reflect the climatic changes and erosional hazards. Technically what has happened as a result of change in climatic conditions are listed below.

Plantations previous to last 10 years yielded more fruits than now. The causes of diminished yield are :

1. Podu cultivation
2. Deforestation of the hills as well as the plains near the hills.
3. Drying up of perennial water sources in the hills.
4. Soil erosion.
5. Climatic changes by which the area is getting warmer.
6. Inadequate and untimely rainfall (the inadequate and untimely rainfall or less or more rainfall causes damage to the orange flowers and fruits).
7. Loss of moisture at the root zone of the plants.
8. Lack of deposit of silt and sufficient humus on the hill-slopes.

SUMMARY

1) Of the total area affected by shifting cultivation 66% are located in Southern Orissa (Koraput 31%, Phulbani 23%, Ganjam 08% and Kalahandi 05%) and 34% in Northern Orissa (Sambalpur 18%, Keonjhar 7%, Sundargarh 6% and Dhenkanal 3%).

2) The density of shifting cultivators in south is 2666 persons per 100 sq. km. coverage under shifting cultivation. The corresponding figure for north Orissa is 464 persons.

3) The tribes practising Shifting Cultivation are Didayi (100%), Bondo (84%), Koya (65%), Khond (48%), Juang (42%), Saora (27%), Paudi Bhuinya (17%) and Gadaba (16%).

4) Of the total area affected by shifting cultivation 61% are with the Khonds, 12% with Paudi Bhuinya, 9% with the Lanjia Saoras, 8% with the Koyas, 4% with the Juangs, 3% with the Gadabas, 1% with the Didayis and less than 1% with the Bondos.

5) Two great centres of shifting cultivation -

   (a) Mountainous countries of Banspal, Bonai and Pallahara, Bamra and Redhakhol.

   (b) Mountainous countries of Ganjam Agency, Koraput, Khondmals, and southern part of Kalahandi.

6) These areas are areas of heavy rainfall (80-100 inches) - destructive in its effect on the steep slopes which have been stripped of their protective covering of vegetation.

7) The loss of soil is the greatest at the onset of the monsoon in June and early July when the soil is hoed or ploughed up.

8) The areas covered under shifting cultivation constitute the catchment of some big rivers such as the Baitarani, the Karo and the Salki of Keonjhar, Bonai and Redhakhol highlands. South Orissa is drained by the Vansadhara, Kolab and Nagavali in Ganjam Agency, Koraput and Kalahandi highlands respectively.

Tribal areas having great potentialities for Sabai grass cultivation, Keonjhar and Mayurbhanj Districts

Sabai grass has a great demand for rope making, Mayurbhanj District

9) All these rivers having their upper catchment in the podu areas are silt-laden at all seasons.

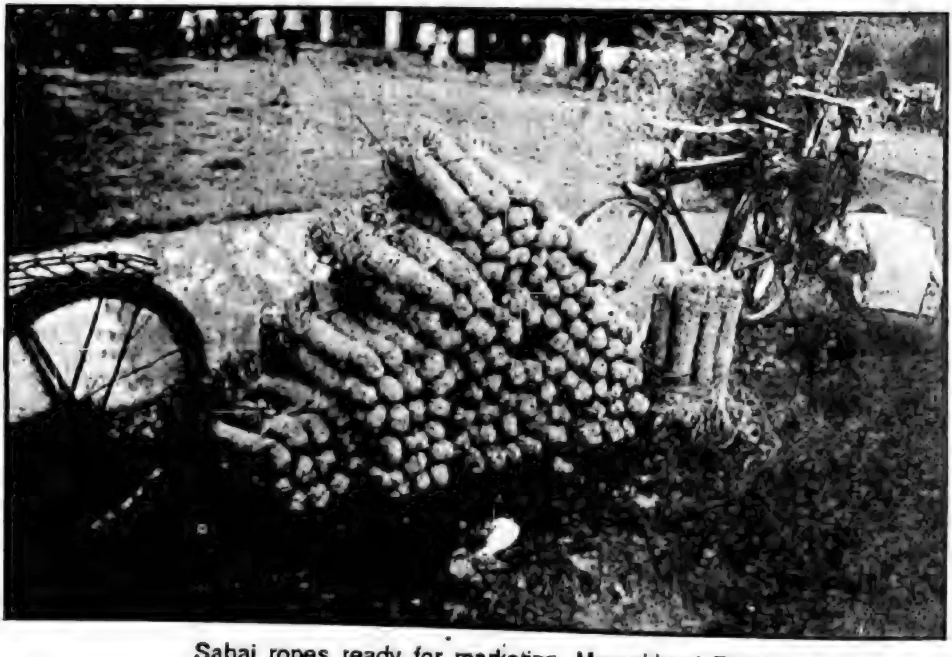
10) South Orissa is worst affected by the practice of shifting cultivation as compared with the North Orissa.

11) Due to the nature of the parent rock the intensity of denudation and soil loss is much greater in southern highlands than in the north of the Mahanadi.

12) The rocks of Keonjhar, Bonai, Bamra and Redhakhol are such which yield red clay loam which erodes slowly and stands up to the onslaught of axe cultivation.

13) Sunabera plateau of Kalahandi highlands has a covering of unfertile soil of sandy texture prone to rapid denudation.

14) The higher slopes of the hills upto the summits in south Kalahandi, Balliguda and starting from Koraput to Pottangi are composed of Khondalite rock yielding a friable soil particularly susceptible to erosion and it is on these slopes that shifting cultivation is mainly carried out and it is this practice which hastens soil erosion.



Sabai ropes ready for marketing, Mayurbhanj District.

15) The low levels and 3000 ft plateau of Koraput are composed of granite gneiss, which is conspicuous on the vicinity of Pottangi is subject to heavy denudation and its convex surface provides no anchorage to the soil and therefore the protecting vegetation is removed. The entire stretch of land from Koraput to Pottangi has become most inhospitable for recolonization by plants.

16) There is a bigger cattle population in the south than in the north. The lower as well as higher slopes right upto the summit have been grazed bare by cows and buffaloes.

17) Of all the natural factors the human factor is more serious. People in south Orissa are more indolent and obstinate; less educated and less acculturized than their counterparts in north. Therefore the desire for permanent and settled cultivation is greater among the tribals living north of the Mahanadi.

18) Other factors which have been responsible for creating a desire for change from shifting to settled cultivation are the steadily diminishing crop yield, success of pilot schemes at Redhakhol and Koira and awareness about material advantage of settled cultivation.

19) The shifting cultivators depend heavily on forests not only for land for cultivation but also for earning subsidiary income through collection of minor forest produce or as wage earners in forestry activities. It is essential that their bias towards forestry and forest activities should be allowed to continue so that these resources could be conserved for mutual benefit.

RECOMMENDATIONS

1. Absence of reliable anthropological, economic and statistical data on shifting cultivation, which varies from region to region and from tribe to tribe, is a major drawback in identifying the gravity and dimensions of the problem and evolving solutions to tackle it.

   Absence of area-wise data on duration of bush-fallowing, cropping pattern and crop yield, extent of denudation, degradation and erosion, extent of damage caused to water regime, intensity of run-off, nature of rock and vegetational cover is a serious drawback in delineating the areas into different gradations on the basis of the extent of damage caused by the practice of shifting cultivation and in devising area specific means which will help the soil reestablish itself and vegetational type progress towards the climatic climax.

2. The problem of shifting cultivation is a matter of change in attitude. The tribal people in general are indolent. So long as they have sufficient food for the day, they do not care for tomorrow and they appear to lack all desire for self-improvement. This attitude should change if their economic condition is to be improved by weaning them away from shifting cultivation.

3. Older people resist change and most doggedly stick to pre-agricultural level of technology. Therefore the younger age groups, who are generally more amenable to new ideas and changes, should be tapped for transfer of technology and introduction of innovations in methods of production.

4. A noticeable feature of the hill-tracts both in north Orissa and in south Orissa is the fine groves of jackfruit trees, mango trees, and orchards of banana, pineapple and citrus plants. These plantations provide the tribals with a valuable cash crop as well as with a nourishing food. Introduction of improved practices in horticulture is one major way in which the economic condition of the people could be improved.

5. Another noticeable feature of certain tribal areas particularly Ganjam Agency is terraced rice-fields. The Saoras show great ingenuity, in contour bunding, water management and terracing. Paddy plants are transplanted in terraced fields under irrigated conditions with application of cowdung manure and recently introduced fertilizer and

Tribal women can be engaged in marketing of Sabai grass,
Mayurbhanj District

pesticides. The Saoras should be provided with improved agricultural inputs and kept busy full time so that their attention is slowly diverted from BAGADA CHASA to wet cultivation.

Paddy grown in permanent terraced fields is used as cash crop to meet the expenses on clothes and ornaments in cash and also to clear the debts where as the millets and pulses grown in swiddens are used as staple crops. Introduction of other types of cash crops such as fruits and income generating cottage industries such as cocoon rearing, leaf plate making and processing of forest produce available in the locality will save paddy from being sold and eventually the millet eating habit may be replaced by rice eating habit with subsequent change from shifting cultivation to settled cultivation.

6. In areas like Keonjhar, Bonai, Bamra and Pallahara where the tribal people see material advantage of settled cultivation and diminished crop yield from the swiddens there has been a spectacular change in their outlook and a desire for settled cultivation has been created. In fact, the Juangs of Keonjhar in many villages have given up second year taila cultivation and have taken to paddy and wheat cultivation in valleys under irrigated conditions. The problem here in these areas is not so much of shifting cultivation as that of exploitation by local traders, merchants and money lenders. What is required for the economic development of the people is to bring about awareness among them about constitutional safeguards and protective legislations and strict enforcement of anti-exploitative measures.

7. The tribal areas particularly those located in hilltracts are most under-developed because of lack of infrastructural facilities. The middlemen and merchants take advantage of this situation and exploit the tribals by various ways. It is necessary to develop roads in these areas and provide fair price shops wherever they are not available and rejuvenate the LAMPS wherever they are not functioning properly and have become defunct.

8. Without educational improvement no other improvement is possible. Schools should be established in villages where they are lacking and made functional by meeting the deficiencies in teaching staff, in building and boarding facilities. Adult education programme and functional literacy is equally and in many respects more important than normal schooling and in this context educational component should form an integral part of all types of developmental programmes.

9. Different tribal communities have different life styles due to the difference in their social systems and cultural patterns, in their ecological setting and means of livelihood, degree of cultural contact and achievement motivation. Although area development approach is commendable it should be followed with emphasis on the specific tribal community inhabiting the area. It means that based on the life style of the tribal groups programmes of development should separately be planned for each ethnic group.

10. The area Development Approach with emphasis on Tribal Development will have the following components :

    a) Human Resource Development, Individual/family oriented benefit schemes such as awareness building, educational improvement, development of skill for need-based occupations and vocations, achievement motivation, and development of material assets.

    b) Development of the area and inhabitants - The development of infrastructures (roads, schools, health centres, LAMPs, banking system, markets, VLW/VAW headquarters, agricultural depots, progeny orchards, electricity, water supply, irrigation facilities, etc.) should be given a high priority.

11. The last but not the least item is that the long range success of a programme depends on self-sustainability which can be achieved provided the beneficiaries are actively involved right from *planning* to the *execution* of the programme.

PREVIOUS STUDIES AND RECOMMENDATIONS

1. Shifting cultivation practices have always attracted the attention of administrators, forestors, anthropologists, sociologists and diverse specialists in general on account of land degradation it leads to, silting of rivers causing floods, progressive loss of soil productivity leading to gradual economic improverishment of the farming communities. According to a majority opinion of foresters, it is ruinous and wasteful, dries up the springs in the hills and causes soil erosion, destroys valuable forests and affects rainfall. Shri M.D. Chaturvedi, former Inspector General of Forests, on the other hand, opined :

> "The notion widely held that shifting cultivation is responsible in the main for large-scale soil erosion needs to be effectively dispelled. The correct approach to the problem of shifting cultivation lies in accepting it not as a necessary evil, but recognising it as a way of life, not condemning it as an evil practice, but regarding it as an agricultural practice evolved as a reflex to the physiographical character of land. For too long, jhuming has been condemned out of hand as a curse to be ashamed of, a vandalism to be decried. This attitude engenders an inferiority complex and unhealthy atmosphere for the launching of any development scheme seeking to improve the current practice."

2. Shri M.S. Sivaraman, one time Member Planning Commission, held a similar view (1953) :

> "It is a mistake to assume that shifting cultivation in itself is unscientific land use. Actually it is a practical approach to certain inherent difficulties in preparing a proper seed-bed in steep slopes where any disturbance of the surface by hoeing or ploughing will result in washing away of the fertile top soil. The tribal people, therefore, take care not to plough or disturb the soil before sowing. The destruction of weeds and improved tilth necessary for proper seed bed are achieved with the help of fire. In most of the interior areas where communication is not developed and sufficient land suitable for terracing is not available jhuming alone can be done for the present and as such every effort should be made to improve the fertility of jhumed land".

3. Several studies were undertaken from time to time on shifting cultivation and related problems. Some of the important reports made in this regard are listed below :

   i) Fortyeighth report of the Estimates Committee of Parliament, 1959.

   ii) Report of the Scheduled Area and Scheduled Tribes (Dhebar) Commission (1960-61).

   iii) Report of the Committee on Tribal economy in Forest area 1967.

   iv) Report of the Study Team on Tribal Development Programme, 1969.

   v) Five Year Plan documents of Planning Commission.

   vi) Task Force on development of Tribal areas (1973) of Planning Commission.

   vii) Report of National Commission on Agriculture, 1976.

   viii) FAO and UNFPA Project report (for India) - Population data regarding Forestry Communities practising shifting cultivation, 1980.

4. The most important of these earlier reports is that of Dhebar Commiss ion (1960-61). In the course of their study of the whole gamut of problems of tribals, they dealt with the shifting cultivation practice also. While agreeing that this practice was not an ideal method, the Commission felt that total replacement of the system would be a long term process. They associated the problem partly with the physical conditions of the land (i.e. mountainous terrain) and partly with social conditions, traditions and beliefs. Their recommendation was to regulate shifting cultivation on scientific lines so as to limit its disadvantages and promote the fertility of the soil.

5. The Task force on Development of Tribal areas (1973) of the Planning Commission while maintaining that the practice could not be considered outright an evil, recommended to make the practice more productive through better agricultural practices such as terracing. Growing of horticultural trees was also recommended to enable the shifting cultivators supplement their incomes. Other measures suggested aimed at general economic development through forest based industries, introduction of mandatory minimum wages, establishing cooperative institutions, development of cottage industries, allowing royalty-free collection of Minor Forest Produce and involvement of tribals in the management of forests.

6. The concept introduced in the Fourth Plan for tribal development needs special mention having regard to its indirect effect on the practice. In certain selected tribal areas, Tribal Development Agencies were set up with a shift in the emphasis from 'extension' and 'welfare' to 'investment' and 'development'. The strategy was to take up integrated development of Agriculture with subsidiary occupations and development of infra-structure. The Fifth Plan document further refined the strategy by introducing Integrated Tribal Development Projects in the State Sector. Each State having a sizeable tribal population was to prepare a subplan for tribal areas specifically indicating the flow of resources to the tribal areas from different sectors. Programmes drawn up thereunder were to ensure comprehensive integrated development of subplan areas, thus leading to general economic improvement.

7. The National Commission on Agriculture (1976) had reviewed the various studies made on shifting cultivation and offered several suggestions. They include :

   1) Programme to wean away shifting cultivators should form a part of the wider plan for tribal welfare.

   2) Main emphasis should be on providing permanent cultivation to shifting cultivators to settle them down. The programme should aim at (a) providing with terraced lands with institutional arrangements to finance irrigation facilities combined with necessary inputs like seed, fertiliser and the like, (b) imparting effective extension education, and (c) setting right the land tenure system.

   3) Strengthening public distribution system through provision of fair price shops for assured supply of essential commodities.

   4) Drawing up programmes as alternatives to agriculture having regard to limited availability of suitable land and high capital cost of such settlement. Some programmes suggested include (a) Afforestation through Agri-silvicultural methods, (b) pasture and grass land development, (c) introduction of horticultural crops as well as plantation crops like rubber, tea, coffee, etc. such that they would provide full time occupation.

   5) Utilising the service of the forest personnel in tribal areas was another recommendation. Since inhospitable conditions and lack of medical and educational facilities deter most administrative personnel from working in tribal areas, it has been suggested to utilize the services of forestors already working in the existing

wide administrative set up in tribal areas, by associating them right from the planning stage for effective coordination of all the activities concerning shifting cultivation.

6) It would be essential to formulate all economic development programmes of tribals only after considering its impact on forest management.

8. The recommendations of the Working Group of Tribal Development for VI Plan strategy further strengthened the tribal subplan approach for integrated development of tribal areas, however, laying special emphasis on co-equal development of forests and tribals in forest predominant tribal belts.

9. In 1973, Food and Agriculture Organisation and United Nations Fund for Population Activities (FAO/UNFPA) sponsored a project on study of shifting cultivation in five countries viz., India, Bangladesh, Thailand, Indonesia and Philippines. A report was brought out separately for India entitled "Population data regarding forestry communities practising shifting cultivation" (1980). Its two important objectives were :

a. Long range objectives :

To assist governments in drawing up an integrated policy framework for population and environmentally-sound land use to ensure improved living standards of forest communities practising shifting cultivation.

b. Immediate objectives :

i) To assemble and assess the information available on forest communities practising shifting cultivation including policies and programmes dealing with them :

ii) To identify gaps in information required for formulating policies and programmes affecting the forest communities practising shifting cultivation.

iii) To develop the technical guidelines for meeting these information needs, and

iv) To exchange information and experience of participating countries.

10. The report surveyed the available knowledge and conducted field studies on the subject and presented its report to a National Seminar held in Calcutta in July, 1980 before a large gathering of scholars from

different disciplines including anthropology, administration, agricultural science, economics, forestry, geography, demography, sociology, statistics, soil conservation, soil science, etc. The recommendations made in this seminar are incorporated in the Annexure - III-I of the report.

11. It could be seen that one of the major recommendations was to tackle the problem created by shifting cultivation practices through integrated area development programme of multi-disciplinary nature covering an unit of watershed/ethnic group/villages, considering the local situation. Accordingly as a part of further study a pilot project was recommended as phase II programme in which development components were to be identified based on local conditions and requirements. The seminar was also specific in its recommendation that such pilot projects should be located at least at two centres one from the Eastern India and the other from the North-Eastern India. For Phase II projects, Orissa for Eastern India and Arunachal Pradesh for N.E. India have since been identified.

12. The standing Board on shifting cultivation headed by Secretary, Ministry of Agriculture is an agency specially designed to monitor the programmes concerning shifting cultivation. It has as its members, representatives from various States and Union Territories. One important recommendation it made in its last meeting held in May, 1982 comprised the revival of the Pilot Project on control of Shifting Cultivation. It started as a centrally sponsored programme with cent percent financial assistance and aimed at providing permanent settled cultivation to shifting cultivators. This project, initiated in 1976-77, had to be given up as a central scheme from 1979-80 onwards owing to the decision of the National Development Council to transfer many such schemes to the State Sector. As a result the onlyever scheme promoted by the Centre specifically for dealing with this problem did not survive the transfer as many States, thereafter failed to continue the programme. There are several other recommendations as embodied in Annexure - III-II of the report.

13. The recommendations embodied in Annexure III-I and III-II reflect the result of most recent study of the subject. All these recommendations and also those in the reports quoted earlier uniformly reflect an anxiety over the threat posed by shifting cultivation and the urgency to wean away the shifting cultivators from this practice. The development programmes having a bearing on shifting cultivation that have been implemented or are under implementation are dealt in a later chapter.

RECOMMENDATIONS MADE IN THE FAO/UNFPA PROJECT ON POPULATION DATA REGARDING FORESTRY COMMUNITIES PRACTISING SHIFTING CULTIVATION (REPORT FOR INDIA - 1980)

SUMMARY OF RECOMMENDATIONS

Most of the areas under shifting cultivation are unsurveyed and basic information like actual location and area, population dependent on it, their production, consumption, levels of development, changes in forest types and soil conditions during shifting cultivation, etc. are not available. The situation all over the country is not uniform and a blanket prescription for the development of all areas is not feasible. Before making any recommendation, regions at lower levels having similar environmental factors, should be studied extensively through collection of data. Following systems are suggested for collection of data on a regular basis :

1. Basic data at the village level should be collected annually by adopting the system followed in Mizoram, for the whole country and the format may be designed according to needs.

2. Institutions like the Pre-investment Survey of Forest Resources, Dehra Dun; National Remote Sensing Agency, Secunderabad; National Atlas and Thematic Mapping Organisation, Calcutta; Survey of India, Dehra Dun may be requested to conduct aerial surveys to ascertain areas under shifting cultivation and other related data.

3. The survey of land and settlement of backward regions is essential for collecting basic information of these areas. The Government of Tripura and Orissa have already started the survey of all backward regions. This programme may be taken up on a priority basis by all States in the study area.

4. Sample surveys and case studies by the Anthropological Survey of India, National Sample Survey Organisation and different tribal research institutes are equally important and should be encouraged to supplement other findings.

5. As this age old practice is deeply rooted in the cultural life of the tribal people, data about the cultural background and traditions of each community should be collected. This may be properly known by research workers only through the approach of an 'insider's view'.

The problem of shifting cultivation should not be considered in isolation and should be solved through 'integrated area planning' which refers to 'functional' and 'spatial' integration.

The location of a selected area for investment is extremely important. An appropriate location may start a chain reaction of development with far-reaching effects, as the resources are limited and cannot be invested simultaneously in all the regions under shifting cultivation. The location for investment should be selected on 'priority' which may be decided on the basis of the pressure of the population on the land and other consequent effects like the rate of production and consumption, the degradation of land, pattern of loan, migration, etc. Another aspect which needs consideration in selection is its capacity for development as a growth centre on the basis of activities present there. A central village with a cluster of villages in its hinterland should be considered as one functional community, and investment should be made in these selected central places.

During the preparation of a plan, especially for agriculture, care should be taken to consider the cropping pattern and the consumption pattern of the local people. Land use plans should not disturb their traditional preferences of crop production and consumption. It should be borne in mind that an imposed plan may not be accepted by the local people if it goes to tally against their preferences.

It is observed that traditional general education may not be enough to motivate the people to work for development. There is a feeling among the older generation that those who are educated among the new generation are not coming back to agriculture. The present system of education, therefore, should be modified in such a way that the people will be interested to develop their own resources including land for better production. It is suggested that during the execution of the plan, the land developed for settled cultivation should be distributed to the community through a co-operative system of management for cultivation.

There is no rapport between the tribal people and the officials of the Forest Department at the lower level. In order to improve their relationship it is proposed that the existing rights and privileges of the tribals should not be abridged except where there are overriding national considerations to do so; and to train forest officials particularly upto Ranger's level, on tribal welfare policy and programmes to develop a sympathetic attitude towards the tribal people.

IMPORTANT RECOMMENDATIONS OF THE NATIONAL SEMINAR

The Phase I report, including the recommendations and proposals for Phase II project, was placed before the National Seminar held in Calcutta on July 25-26, 1980, for discussion. About seventy scholars from different disciplines like Anthropology, Administration, Agricultural Science, Economics, Forestry, Geography, Regional Planning, Demography, Sociology, Statistics, Soil Science, etc. representing various States of the country participated in the discussion. Important recommendations emerged through elaborate discussion are as follows :

1. The concept that the shifting cultivators were the sole or the main agency that destroyed the forest was not correct. For there were other agencies which had been in operation, that were far more destructive to the forests. At the next phase of research the situation should be explored from the point of view of shifting cultivators rather than exclusively from the point of view of preservation of forests.

2. The programme should work out phases of adaptation through which alternative technologies and means of living may be available to the shifting cultivators within their social and cultural control while they are not pushed out of their terrain. This will need a more complete study of the possibilities of resource mobilization and technological development with full participation and control of the indigens.

3. One centre for the country would not be sufficient for total study under the Phase II programme. Rather a number of centres having different ecological zones should be organised over the country. But considering the financial limitations of this project it was felt that at least two centres, one from the eastern India and the other from the north-eastern India should be organised. Other Research Organisations of the country could also be encouraged to take up projects on similar lines in other centres with their own resources. Criterion for selection of community should be on the basis of pressure of population on land (say, 25 persons per square mile) which may be the critical limit of population supported by shifting cultivation.

4. There should be a regular system to collect the basic data required for further study of shifting cultivation. But before prescribing the nature of data to be collected there should be serious thinking about its proper use in future.

5. The integrated area development programme for these communities should be of multi-disciplinary nature and should cover an unit of water-shed/ethnic group/villages, considering the local situation.

6. Research work should be organised for :

   a) study of changes in forest types, soil characteristics and water regime during the shifting cultivation cycle;

   b) selection of suitable tree species for varying conditions of shifting cultivation practice for evolving suitable agro-forestry practice;

   c) evolving suitable agronomic practices to improve their mixed cereal crop cultivation;

   d) study of ethno-botany and ethno-forestry;

   e) study of land ownership pattern, including alienation as a result of introduction of development programmes;

   f) feasibility study of family planning programme.

7. Area under shifting cultivation should be assessed with the help of pre-investment Survey of Forest Resources Unit, National Remote Sensing Agency, National Atlas and Thematic Mapping Organisation, Survey of India and other organisations.

8. The people in authority including Government Officers and political leaders, should be properly oriented towards programmes for control of shifting cultivation in order to get their support for the programme.

9. The Task Force may be expanded through inclusion of specialists like Anthropologist, Agronomist, Regional Planner, Sociologist and others to provide necessary research base and financial and logistic supports.

RECOMMENDATIONS OF THIRD MEETING OF BOARD ON SHIFTING CULTIVATION HELD AT ITANAGAR ON 25.5.1982

i) The Central Sector scheme of Pilot Project for Control of Shifting Cultivation which was transferred to State after 1978-79 should be revived. The earlier family oriented approach may be kept.

ii) The programme should be accelerated as much as possible by mobilising funds from tribal development funds, NEC, IRDP, NREP, Special component plan, etc. and specific programmes for Jhum control should be drawn up with family oriented approach.

iii) Watershed approach may be kept but the programmes must be family oriented.

iv) Intensive Extension and Training programmes may be started for the farmers. Director Extension, Ministry of Agriculture should prepare films depicting evil effects of shifting cultivation. Effort made and films prepared by Govt. of Meghalaya may be seen.

v) The experience of Arunachal Pradesh in creating Anchal Reserves out of Community Jhumed Lands should be taken note of, and started in other States. Besides afforestation, cash crops like tea, coffee, cardamom, rubber, etc. may be planted and profit shared with tribals for running schools and hospitals. Help of Tea, Rubber, Coffee Boards may also be taken.

vi) For Forestry plantations funds available under Social Forestry should be availed.

vii) Irrigated terraces may be developed wherever possible but unirrigated terraces may also be developed in *Situ* by adopting water harvesting technology. Jhumias should be motivated to adopt improved agricultural practices and given necessary inputs like fertilizers, improved seed, tools, etc.

viii) Additional funds should be mobilised through financial institutions, like AFC, ARDC, Nationalised Banks, Land Development Banks, etc. Suitable agencies may be identified for adoption of villages.

ix) When Jhumia families are settled a specific undertaking/agreement should be taken from them to the effect that they will henceforth, not do shifting cultivation otherwise the developed land and other advantages should be withdrawn.

x) Suitable legislative measures may be attempted to control shifting cultivation. In any case guidelines for 'Jhum Control' should be issued by all States/UTs.

xi) Cadastral survey and settlement should also be started where Jhumias have taken to settled cultivation such as in Apatani area under various schemes.

xii) To provide effective coordination and monitoring with Govt. of India for Jhum control programmes, one Secretary to Govt. in each State/UT should be nominated as Contact Officer. NEC should also have one Contact Officer.

xiii) Specific surveys should be taken up quickly to assess areas affected by Jhuming. The F.S.I. should also assess total area under Jhuming and area Jhumed in one year with the help of aerial photographs.

xiv) The FRI should open a cell for conducting research on the problem of shifting cultivation and how best it can be tackled.

xv) As suggested by the Member from Arunachal Pradesh, the duration of period of maintenance of plantations under Jhum Control Programme may be extended from 3 years to 5 years to enable the project authority to hand over the plantations at yield level to the beneficiaries.

xvi) Each state should have a High Level Committee or State Board of Shifting Cultivation under the Chief Secretaries with Secretaries and Heads of the concerned Departments and other experts. This board should meet at least twice in a year. JC(SC-F) in the Ministry of Agriculture may also be included in this board.

ORISSA

I. IDENTIFICATION OF SHIFTING CULTIVATION PROBLEM

i) Comprehensive survey of jhuming :

a) Total area under Jhuming as on 31.3.82 : 30,000 sq. km.

b) Area jhumed annually : Varies from 7,000 to 10,000 sq. km.

c) Jhuming cycle (Range) : 9-12 years in Northern Orissa.
: 4-6 years in Southern Orissa.

d) Season at which the preparatory work including land clearance work is undertaken. : February-March to onset of monsoon.

e) Number of families engaged in jhuming - : 6,93,000 (Details given separately)

f) Socio-economic conditions of these jhumia families (description) : Enclosed separately.

ii) Quantification of degradation/erosion problems :

a) Forest land/plantation/ terraced agricultural land affected (land use-wise) : exent and value.

In Koraput district, where about 8,000 sq. k.m. of area are affected by shifting cultivation, there, severe sheet erosion has taken a heavy toll of the hill slopes, forming deep gullies and ravines at many places. In Phulbani district about 5000 sq. k.m. of Sal forests are severely affected and many of the hills, which once contained beautiful sal forests have now been completely barren with out-crop of rock. In such areas, Tropical pines and other species of economic importance

		are being planted. In other districts like Keonjhar and Kalahandi, the position is also acute.
b)	Details of Storage structures/rivers/ water courses affected.	Shifting cultivation is the main contributing factor for depletion of watersheds of the river Mahanadi and its tributaries. Brahmani, Baitarani, Indravati, Rusikulya and Vansadhara rivers are also affected by shifting cultivation. Due to heavy siltation in the upper catchment of the river Mahanadi, heavy siltation has affected the impounding capacity of Hirakud Dam.
c)	Ecological/environmental dislocation/disturbance identified.	Not available.
d)	Types of erosion including annual volume of sediment yield.	Not available.

II. DEVELOPMENTAL PROGRAMMES (PLAN-WISE) DETAILS OF AREA TREATED/FUNDS UTILISED UPTO 1979-80 ON THE FOLLOWING :

i)	Progress/efforts of Govt. of India Agencies (Ministry of Agriculture/Ministry of Home Affairs, N.E.C./others)	Special Central Assistance ITDP 5th Plan 1251 ha. Rs. 14,940 lakh 1978-79 1348 ha Rs. 4,354 lakh
	Total	2599 ha Rs. 19,294 lakh
ii)	Progress/efforts under State Sector.	
iii)	Progress/efforts through institutional finance (external aid, nationalised, land development/cooperative banks, etc.)	Not known.
iv)	Programme/progress for Sixth Plan under various agencies mentioned at (a), (b) and (c) above :	

a)	Physical target/achievement	No specific programme for
b)	Outlay/funds utilised	podu ravaged area.

v) Details of programme for future.

a)	Suggest the most suitable type of programme from the following :	The items mentioned under P&O are suggested.

b) Integrated approach of watershed basis involving community works such as education, health, water-supply, animal husbandry, sericulture, piggery, poultry, roads, housing, etc.

c) Family-oriented on watershed basis with terraced agricultural land with irrigation facility wherever possible plus developed economic or horticultural or forest plantation without any other community works.

III. RESEARCH AND EXTENSION

a)	Information on the available research findings/innovation for control of jhuming and extension approach.	No research taken up by the Deptt.
b)	Future Research/Suggestions :	As will be decided by the Task Force.

IV. JHUM CONTROL ACT/REGULATION

Existing act/regulation on the policy for jhum control. There is no specific Act for control of shifting cultivation. Orissa Forest Act, 1972 is applied for control of shifting cultivation. Govt. have implemented the policy of reservation and conservation of forests. Since Podu cultivation in Orissa has come to stay for various decades, it is necessary to rationalise and regulate the same by appropriate Act and Regulation in the same pattern as in case of Garo hills in Meghalaya. It is very necessary that the Podu cultivation has to be regulated, if not stopped altogether, so that fresh intrusion into the beautiful sal forest does not take place as is now the rule with the tribals. In Orissa, there are no customary right as is the case in North-Eastern India.

AREAS AFFECTED & TRIBES PRACTISING SHIFTING CULTIVATION

District	Block	Area in Km.	Names of Tribes	Approximate size of population
1	2	3	4	5
Koraput	1. Khairput	273.88	Hill Bonda	5000
	2. Kudmulgumwa	507.88	Hill Didayi	2000
	3. Kalimela	1052.16	Koya	15000
	4. Padia	507.88	Koya	12000
	5. Korkunda	819.20	Koya	22000
	6. Malkangiri	658.37	Koya	5000
	7. Rayagada	324.28	Khond	38000
	8. Kolnera	385.59	Khond	27000
	9. Kalyanisingpur	411.18	Khond	22000
	10. Kasipur	1602.21	Khond	
	11. Dasarathpur	578.98	Khond Paraja	25000
	12. Laxmipur	286.20	Khond	20000
	13. Narayanpatna	532.48	Khond	11000
	14. Bandhugaon	96.60	Khond	12000
	15. Similiguda	466.21	Gadaba	1000
	16. Pattangi	517.99	Gadaba	4000
	17. Gunupur	468.97	Lanjia Saora	2000
	18. Gudari-I	273.55	Kutia Khond and Khond	5000
	19. Gudari - II	532.48	Kutia Khond	11000
	20. Bisamcuttack	419.53	Dongaria Khond	18000
	21. Ramanaguda	453.25	Kutia Khond	2000
	22. Muniguda	459.20	Kutia Khond	5000
		11,528.07		3,40,000
Ganjam	23. Guma	494.08	Lanjia Saora	22000
	24. Rayagada	122.83	- do -	29000
	25. Nuagarh	548.13	- do -	10000
	26. R. Udayagiri	512.00	- do -	9000
	27. Mohana	1303.07	- do -	10000
		2,980.11		80,000

1	2	3	4	5
Sundargarh	28. Bonaigarh	284.35	Pauri Bhuyan	1000
	29. Lahunipada	775.68	- do -	3000
	30. Gurundia	402.85	- do -	5000
	31. Koira	837.20	- do -	6000
		2270.08		15,000
Keonjhar	32. Telkoi	819.48	Pauri Bhuyan	12000
	33. Harichandrapur	592.02	Hilljuang & Bhuyan	6000
	34. Banspal	1116.23		10000
		2527.73		23000
Phulbani	35. Balliguda	640.00	Khond	16000
	36. Nuagaon	430.80	- do -	14000
	37. Daringabadi	1211.00	- do -	29000
	38. Kotgarh	1638.40	- do -	13000
	39. Tikabali	303.20	- do -	16000
	40. G. Udayagiri	84.14	- do -	12000
	41. Raikia	515.14	- do -	15000
	42. Chakapad	311.20	- do -	13000
	43. Tumudibandha	54.50	- do -	11000
	44. Phulbani	472.40	- do -	13000
	45. Khajurpada	527.36	- do -	17000
	46. Phiringia	1146.06	- do -	26000
		8435.20		1,95,000
Kalahandi	47. Th. Rampur	323.76	Khond	18000
	48. Langigarh	999.74	- do -	15000
		1323.50		33,000
Sambalpur	49. Gobindpur	526.87	Khond	2000
	50. Jamankira	968.66	- do -	
	51. Kuoninda	417.71	- do -	
		1913.24		2,000
		30,977.93		

SUMMARY NOTE ON THE FIRST MEETING OF THE TASK FORCE ON SHIFTING CULTIVATION HELD ON 19.4.1983 AT NEW DELHI

The first meeting of the Task Force on Shifting Cultivation was held on 19th April, 1983 at New Delhi under the Chairmanship of Inspector General of Forests. A list of participants who attended the meeting is appended. The Chairman after welcoming the participants briefly explained the circumstances in which the Task Force was constituted. He also referred to the statement made by Minister of State for Agriculture, Government of India in the Lok Sabha on the 18th April, 1983 about the submission of the report by the Task Force by the end of May, 1983. To start with the Chairman requested Shri E.S. Thangam, Member of the Task Force, to explain the details of problem, efforts/progress made, programme including legislative measures, suggestions and for future adoption, etc. relating to shifting cultivation. Shri Thangam who was associated with the Task Force of an FAO/UNDP Project on "Population data in Asian Forestry Communities practising shifting cultivation" as a member explained briefly the problems, programme/ progress and other related developments. He explained that the shifting cultivation is practised in an intensive manner in the north eastern region and that in partial manner in the states of Orissa, Andhra Pradesh and Madhya Pradesh. In the States of Kerala, Karnataka, Bihar this is being practised in a marginal way. The available information on the problem has been identified based on 1971 census and, therefore, he stressed the need for updating the information. Further he suggested that for obtaining the reliable statistical information on the problem areas we should attempt to collect information by satellite imageries through N.R.S.A., Hyderabad. He also explained the availability of information/recommendations with ICAR Complex for north eastern region at Shillong, Agro-economic centres, NEC, Ministry of Home Affairs, Ministry of Agriculture, States/UTs and other organisations in the country. After citing the existing jhum control Regulations/Act he also stressed the need for making them more effective, if necessary, with suitable amendments whatever necessary. At the end he stressed that since shifting cultivation has become the way of life of the tribals, the only solution is to find an alternative economically sound approach with effective peoples' participation. Dr. N. Patnaik, Director, Tribal Research Institute, Bhubaneswar, was then requested to share his experience with the members and other participants. Dr. Patnaik indicated that according to the earlier report the area under shifting cultivation

in Orissa was one-fifth of the land surface and according to the recent surveys undertaken by the Tribal Research Institute, Bhubaneswar, the same has been reduced to one-sixth of the land surface. He further explained the location of the problem in Orissa, living conditions of the tribal population who practise jhuming and the efforts made by his Institute in the collection of data, development of models, etc. Subsequently, Shri Das, Additional Chief Conservator of Forests, Orissa reported that out of 67,000 sq. km. forest area in Orissa jhuming is practised in 30,000 sq. kms. He also mentioned that the efforts of the Agro-Industries Corporation who wanted to raise 'subabul' plantation in the jhumed areas did not succeed. On the other hand, the tribals in that area preferred "sal" for covering ginger and turmeric beyond 10% ground slope. Orissa was very less and that the area reported by Shri Das, Addl. C.C.F., Orissa appears to be on the higher side and, therefore, needs further verification. Shri Krishnamurthy, Conservator of Forests, Andhra Pradesh, mentioned that in his state out of 40,000 ha. of forest area, 26,000 ha. belongs to the Forest Department and the remaining 14,000 ha. is under the State Revenue Department; survey has already been completed in 8,000 ha. Shri D.N. Tiwari, Ministry of Home Affairs, indicated that plenty of information was available on the problem and efforts made relating to Shifting Cultivation. He also quoted that more reliable information was compiled during the recent meeting held at Calcutta. He further mentioned that the data through vegetation map brought out by an organisation at Pondicherry could also be more useful for identifying the problem areas. He emphasised that for effectively tackling this problem the existing regulation/Act need be reviewed. At this juncture the Chairman requested Shri Tiwari to examine all the aspects of the existing jhum Act/regulations in 20 days so that the factual position is brought out. For this purpose and for suggesting improvement in the existing law, the Chairman also suggested for constituting a group from among the members of Task Force and officials of this Ministry. Shri Tiwari further stressed the need for review of the successful models for final recommendation of the Task Force. He also suggested that the information available with the States, NEC, Ministry of Agriculture, Govt. of India, ICAR and other related organisations should be collected on priority basis for the purpose of identifying suitable models. The Chairman suggested that a letter should be immediately issued to the concerned State Governments and other organisations on the lines suggested by Shri Tiwari. Further it was also decided that this information should be made available to Dr. N. Patnaik for compilation and submission to the Task Force in the next meeting. The Chairman desired that a Sub-Committee should be constituted to assist Dr. Patnaik to go through the available information. Besides Dr. Patnaik, this Sub-Committee should include Dr. Borthakur, Director, North Eastern Region Research Complex, ICAR, Shillong, Shri Jagannathan, NEC Consultant, Shri K. Krishnamurthy, Conservator of Forests,

Andhra Pradesh, Shri E.S. Thangam and Dr. Ray. Finally it was decided that the Sub-Committee should meet on 18th to 20th May at Harijan & Tribal Research Institute, Bhubaneswar. If necessary, the sub-committee could also go and visit jhum control projects around Bhubaneswar.

After detailed discussion, it was felt that in view of time needed in collecting information, including study of successful models compiling the data and working suitable recommendations, the Task Force may not be able to complete work by end of May 1983, and therefore, at the first instance the Task Force should submit an interim report by the end of May, 1983. It was decided that the second meeting of the Task Force including the legal group and sub-committee should be arranged between 27th and 29th May 1983 at Itanagar during which period the sub-committee should meet and finalise its interim report. The members of Task Force including invitees could visit some of the jhum control projets located in Arunachal Pradesh on the 28th May 1983. In this connection, the Chairman also advised to write to the Chief Secretary and C.C.F., Arunachal Pradesh for necessary arrangements. It is requested to consider the format of questionnaire and suggest modifications if any so that the States/organisations concerned could also be pursued for furnishing the information.

The important decisions which emerged during the above meeting are as follows :

(1) Information available with various States, Central Ministries, North Eastern Regional Research Complex, ICAR and other organisations like Institute for mapping of vegetations of Pondicherry should be collected; if necessary, an officer from this Department can be even sent to various State/Central Government Institutions including the Institute of Pondicherry for this purpose.

[Action : Members of Task Force/JC(SC)]

(2) In order to compile and review the existing jhum control Act/Regulation and also to suggest suitable amendments/legal aspects, a legal group should be formulated to assist the Task Force. Shri D.N. Tiwari, member representing Ministry of Home Affairs would coordinate and Shri E.S. Thangam and Dr. Patnaik would assist Shri D.N. Tiwari.

(Action : Shri Tiwari, Shri Thangam and Dr. Patnaik)

(3) In order to compile, review and suggest suitable successful models of projects for control/replacement of shifting cultivation a sub-committee should be formulated to assist the Task Force; besides Dr. Ray, Shri E.S. Thangam and Dr. Patnaik, members of Task Force, this Sub-committee

would also comprise Shri K. Krishnamurthy, Conservator of Forests, Andhra Pradesh, Dr. Borthakur, Director NEC complex, ICAR, Shillong, and Shri Jagannathan Consultant NEC; Dr. Patnaik would coordinate this sub-committee for furnishing information on different models of projects for jhum control/replacement of jhum cultivation to Dr. Patnaik, letters should be sent to the concerned State implementing agencies and other organisations from the Ministry along with a proforma, Dr. Patnaik would compile and bring out a status paper.

[Action : JC(SC), Members of Task Force]

(4) Available information on the programmes/progress including jhum control Act, etc. with the concerned State implementing agencies should be obtained utilising the questionnaire already developed for this purpose, a letter should go from the Ministry enclosing the questionnaire.

[Action : JC(SC]

(5) In order to review and consider suitable successful models of projects, sub-committee could meet at the Harijan & Tribal Research Institute, Bhubaneswar between 18th and 20th May 1983; if necessary, this sub-committee should also visit some jhum control projects around Bhubaneswar to enable it to suggest practical recommendations.

[Action : JC(SC) and members of sub-committee]

(6) For consideration and finalisation of an interim report by the Task Force, the members of Task Force including some invitees and other members of the sub-committees should meet at Itanagar between 27th and 29th May, 1983; the sub-committee would meet on the 27th May and the members of the Task Force including special invitees and other members of the sub-committee would meet in the final meeting on the 28th May 1983 for consideration and finalisation of the interim report; the member participants of the final meeting would also visit some of the jhum control projects in Arunachal Pradesh.

[Action : JC(SC), Members of Task Force and other members of sub-committee]

(7) For Arrangement of the meeting at Itanagar and for organising field visits of jhum control projects in Arunachal Pradesh between 27th and 29th May 1983 an official letter should go to Chief Secretary and C.C.F., Arunachal Pradesh Administration.

[Action : JC(SC]

MEETING OF THE TASK FORCE ON SHIFTING CULTIVATION HELD ON 19.4.1983

LIST OF PARTICIPANTS

I. From States and other Ministries/Organisations

1. Shri A.V.R.G. Krishna Murthy, Conservator of Forests, Visakhapatnam, Andhra Pradesh, Representing C.C.F., Andhra Pradesh.
2. Shri S.P. Mistra, Conservator of Forests, Bhopal - Representing C.C.F., Madhya Pradesh.
3. Dr. H.M. Ray, Professor of Anthropology - Member, University of Calcutta. - Member.
4. Shri E.S. Thangam, Chief Conservator of Forests (Retd.), Member. Arunachal Pradesh - Member.
5. Dr. N. Patnaik, Director, Harijan & Tribal - Member, Research Institute, Orissa, Bhubaneswar.
6. Shri P.S. Ingty, Chief Conservator of Forests, Meghalaya State, Shillong.
7. Shri B.L. Das, Addl. C.C.F., Orissa, - Representing C.C.F., Orissa - Bhubaneswar.
8. Shri D.N. Tiwary, Deputy Secretary (Tribal Development) - Member, Ministry of Home Affairs, Govt. of India, New Delhi.
9. Shri P.C. Bhatia, Senior Scientist, - Representing Dr. N.S. Randhwara, Member, I.C.A.R., New Delhi.
10. Shri U.C. Kachari, Jt. Director of Soil Conservation, Meghalaya, Shillong.

II. From Department of Agriculture & Cooperation, Govt. of India

1. Shri D.C. Das, Joint Commissioner (SC)
2. Shri A.V. Ramakrishna Rao, Jt. Commissioner (SC-F)
3. Shri S. Subramaniyan, Dy. Commissioner (SC-E)
4. Dr. Suraj Bhan, Dy. Commissioner (SC-I&C)
5. Shri H.S. Nanda, Specialist (Hydrology)
6. Shri B.K. Mukherji, Senior Statistician.
7. Shri L.R. Kametkar, Asstt. Soil Cons. Officer
8. Shri Dinesh, Asst. Soil Cons. Officer

SUMMARY NOTE ON THE FIRST MEETING OF THE SUB-COMMITTEE OF THE TASK FORCE ON SHIFTING CULTIVATION HELD FROM 18TH TO 20TH MAY, 1983 AT BHUBANESWAR

The first meeting of the Sub-Committee of the Task Force on shifting cultivation was held from 18th to 20th May, 1983 at Bhubaneswar under the chairmanship of Dr. N. Patnaik, Director, Tribal and Harijan Research-cum-Training Institute, Bhubaneswar. A list of the participants who attended the meeting is annexed. After welcoming the participants, the Chairman briefly explained the purpose of holding the meeting of the sub-committee. It was decided in the first meeting of the Task-force on shifting cultivation which was held on the 19th April, 1983 at New Delhi that the meeting of the sub-committee be held at Bhubaneswar and to compile, review and suggest suitable models of projects for control/replacement of shifting cultivation. Accordingly the members were intimated to furnish information to Dr. Patnaik enabling him to compile and bring out a status paper. During the sub-committee meeting Shri AVRG Krishna Murty, I.F.S., Conservator of Forest, Vizag, Andhra Pradesh, Sri E.S. Thangam, Officer on Special Duty, Forest Corporation Ltd., Arunachal Pradesh, Shri S. Jagannathan, Consultant, North Eastern Council, Shillong and Shri B.L. Das, Addl. Chief Conservator of Forests, Orissa, presented pilot projects and forest development schemes which are being implemented in their respective areas of operation and reviewed the work of such schemes and their impact on tribal people. Others present in the meeting such as Shri S.N. Das, Chief Conservator of Forests, Orissa, Sri C.S. Dani, Conservator of Forest, Berhampur, Orissa, Shri R. Satpathy, Director, Soil Conservation, Orissa, Shri G. Mohapatra, Deputy Director, Soil Conservation, Orissa, Dr. H.M. Ray, Professor of Anthropology, Calcutta University participated in the discussion by reviewing the developmental schemes related to the control of shifting cultivation and the success and failure of the schemes in the broader context of tribal habitat, economy and society. Also Sri A.V. Ramakrishna Rao, Joint Commissionor (SC-F) Department of Agriculture and Cooperation, Government of India and Dr. N. Patnaik, Director, THRTI, Bhubaneswar actively participated in the discussion by contributing their experience and ideas regarding the problem of shifting cultivation. The broad features and the important points which emerged from such discussions are stated below :

1. The Pilot Projects which are being undertaken in Sileru/Machhkund basin are given low priority under the State sector and except employment which the pilot projects provide to the people there is no people's participation in the schemes. The fruit orchards which have come up in several places suffer considerable damage and destruction for want of maintenance. The tribal people have not yet been able to appreciate the benefits from cashew plantation and therefore instead of plucking fruits cause damage to the plants by breaking branches. Wherever terraces have been built and laid out these are demolished and ploughed down.

2. Coffee plantation has been a great success in tribal areas of Vizagpatam, Andhra Pradesh. The tribals take considerable interest in coffee plantation. It is the feeling of the experts that coffee is a good conservancy plant and since coffee is an acceptable plant there should be liberal subsidy for growing coffee. It should also be exempted from Forest Conservancy Act.

3. Plantation of quick growing species in denuded areas is another scheme implemented in tribal areas under pilot project. The tribals do not evince any interest in teak and bamboo plantation. Wherever plantation of teak and bamboo has been taken up in podu-ravaged areas, the tribals have pulled out the plants and damaged the plantation.

4. Various soil conservation measures like gully-plugging and contour bunding have been taken in the tribal areas, but lacking maintenance of engineering structures such measures are undergoing deterioration. Simililarly for want of funds from ITDA sources maintenance of coffee plantation has been a problem.

5. It is necessary to take immediate steps to set up a maintenance section to look to the maintenance of different developmental schemes which have been implemented in the tribal areas. No scheme which promises economic benefit to the tribal people can be sustained unless fair price is guaranteed to the tribals for their agricultural and minor forest produce. The public distribution system needs overhauling and a single line administration is most appropriate for delivery system in the tribal areas. The schemes which are implemented through various pilot projects are meant not only for raising their economic standard but also for ensuring their economic democracy. The economic democracy is attainable by encouraging the tribal people to get themselves associated in the developmental schemes and take pride in the maintenance of such schemes. Unless the control of production by the workers is achieved, no economic democracy can take place. It is, therefore, necessary that the

people should be partners in the organization of production in order to get their legitimate share in the benefits accruing from developmental schemes.

6. The approach to tribal development through pilot projects implemented in Arunachal Pradesh is different from those adopted in Andhra Pradesh. Before any scheme for the integrated area development is taken up a systematic land use survey is undertaken and felt needs of people are determined. Discussions are held with people of different villages to make them aware of proposed schemes and solicit their willingness to participate in such schemes. Such integrated area development programmes are taken up in such villages where the people have expressed their willingness to adopt such programmes and participate whole heartedly in the implementation of the programmes.

7. If the immediate felt need of the people in a particular village is the construction of road linking their village to the main road, in that case construction of road is taken up first and in the meantime the people are mobilised to take up integrated area development programmes of development.

8. The important strategy adopted in Arunachal Pradesh is to take up integrated area development programme, in a small scale limiting to one or two villages and as the programme succeeds the neighbouring villages are bound to come under the spread effect of these successful schemes. Thus large areas are brought under forestry development with full cooperation and participation of the people.

9. Scattered individual oriented benefit schemes do not form part of the developmental strategy adopted in Arunachal Pradesh. Instead the village development approach forms the main plank on which the developmental strategy rests.

10. The integrated area development programmes such as big cardamum plantation which is taken up in a village called Mingtong provided employment to one-member from each household of the village in the plantation throughout the year. This factor of employment has favoured participation of local people in the improved forestry activities.

11. Coffee and tea plantation have been taken up in various villages extensively with a great success and in all such cases the local people have been associated in the plantation programmes and developmental activities. The Forest Corporation which takes up such plantation is interested in overall development of the people, and therefore, has established fair price shops, first aid centres in villages which come under their

operation. Briefly speaking the receptivity survey and land use survey, small operational units, people's participation, absorption of local people in plantation schemes, provision of such facilities as fair price shop and first-aid have in a combined form contributed to the success of these integrated area development programme in Arunachal Pradesh.

12. The approach of the North Eastern Council to the development of tribal people is more or less similar to that of Arunachal Pradesh with minor differences in programme implementation. The broad objective of developmental strategy followed by the North Eastern Council is the improvement of the economic condition of the people. Thus the approach is oriented more towards area development rather than individual benefit schemes. The premise on which the idea of development works is that the people are more likely to accept innovative ideas provided they are not in shortage of food. Therefore such schemes as are needed for increasing food production have been taken up by harnessing the natural resources.

13. A multidisciplinary team consisting of agriculturist, horticulturist, animal husbandry expert and silvi culturist, soil scientist, engineer put their heads together in formulating location specific developmental projects and collaborate with one another starting from the planning to the achievement of goals.

14. The main developmental strategy is the watershed management and through this process paddy cultivation in irrigated lands, horticulture, animal husbandry and forestry have been taken up at different altitudes in the area which come under watershed management.

15. Before any watershed management is taken up in a particular area an intensive survey is carried out in the area to find out the land use, soil types, contour and other topographical peculiarities and identify greater problem areas. The purpose of watershed management is to rehabilitate Jhumias in settled cultivation. Therefore the area having Jhumia households in greater concentration were taken up on top priority basis. Discussions are held with the target group by the technical staff and extension agents of the council and upon the willingness of the people developmental schemes are implemented in their villages. The survey investigation planning cell provides necessary data and also formulate data-based developmental projects for different areas.

16. Production is also linked with marketing so that the people are able to find easy outlet of their surplus produce giving them maximum benefit in the transaction.

17. The Pilot Projects taken up in Orissa for control of shifting cultivation are more or less the same as those of Andhra Pradesh. The measures which were taken in the past to control shifting cultivation were in the form of rehabilitation and land colonisation. Some such schemes have been successful but many such schemes have met with failure. Nearly three decades ago a dedicated forest officer Dr. H.F. Mooney by name established a colony in Sambalpur district to settle down the Jhumia families in wet cultivation and this colony is still in existence. But some other colonisation schemes and rehabilitation colonies set up in other areas have failed on account of various factors of which sociological factors were most fundamental. Black pepper cultivation under sal trees, coffee plantation and plantation of quick growing species in degraded forest land, cashew and orange plantation in podu-ravaged areas, development of water harvesting structure and vegetable growing in many plateaus are some of the important podu control schemes implemented in different parts of the States.

18. In many areas the efforts made towards the solution of problem and consequent improvement of the economic condition of the tribal people have yielded positive results. But the illiteracy and lack of education, inaccessibility and ecological constraints have militated against many such developmental efforts. Whereas the wealthier sections living in the tribal areas or having influence over tribal communities are largely benefitted from the increased investment and change induced through various forestry development project, the tribals are expropriated from such benefits. It is these exploitative agencies who induce the tribal communities to continue the practice of shifting cultivation not as much for the benefit of the Jhumias as for their own benefit.

19. It is felt that specific schemes with specific allotment of funds should find place in the planning process exclusively for tackling the problem of shifting cultivation. Besides specific schemes and funds there should be a podu or jhum land Act to regulate the practice of shifting cultivation.

20. For about half a century or so have elapsed since various attempts have been made to keep the shifting cultivation in check and to wean tribal families away from this method of food production. Inspite of best efforts the problem continues to bother the planners, administrators, forest officers and academicians. Some persons who are competent to speak on this subject are outraged at the vandalism of tribal people and are in opinion of banning it altogether. Some others who are equally competent to speak on this subject express a deep concerned about it and

are in sympathy with the tribal communities. One of the noted sympathisers is Sri M.D. Chaturvedi, the former Inspector General of Forests whose views are quoted below :

"The correct approach to the problem of shifting cultivation lies in accepting it not as a necessary evil but recognising it as a way of life; not condemning it as an evil practice but regarding it as an agricultural practice followed as a reflex to the physiographical character of land".

Whatever may be the merits or demerits of such an opinion which is expressed by Mr. Chaturvedi, it is clear that common phenomenon of animocity of the tribal communities towards forest staff has arisen out of open condemnation of the practice of shifting cultivation as a sort of vandalism of the shifting cultivators. This attitude has engendered an inferiority complex among the tribal people and created an unhealthy atmosphere which resists any plan for the improvement of the current practices in regard to shifting cultivation.

21. From the lessons learnt in the past it is evident that like any human group the tribal communities do not like to leave their own habitat even though places located in favourable environmental conditions promise better living condition and employment opportunities. In view of this the correct approach would be to improve traditional methods of shifting cultivation along the modern scientific lines and develop achievement motivation among the tribal people to adopt improved practices for better food production and for higher standard of life without any sort of their displacement from their own habitat.

22. Possibilities of bringing green revolution to the shifting cultivators will have to be explored for different regions. Some favourable conditions which may help in modernising the slash-and-burn system of tillage are (1) Zero tillage and plant residue mulches, (2) mixed crops of high yielding varieties which are disease and paste resistant, (3) fertilizer to replenish nutrients, (4) fallow cropping of legumes with highly active nitrogen-fixing bacteria to supply nitrogen to the soil and other crops, (5) control of acidity by means of ash or mulches of deep rooted species.

23. The improved practices as outlined above can be put across to a shifting cultivator through demonstration of improved farming in one of his swidden plots. The particular plot will be divided into two halves. In one half shifting cultivator will be allowed to carry on shifting cultivation in the traditional way and in the other half of the plot crops will be grown by using the modern methods of cultivation. Such result demonstration

is bound to influence the traditional shifting cultivator to adopt improved agricultural practices.

24. The discussions were wound up at the end and thereafter the programme for the meeting of the Task Force was tentatively worked out and with this, the meeting of the sub-committee was brought to a close.

Members present in the meeting of the Sub-Committee of Task Force on shifting cultivation held at Bhubaneswar during 16-20 May, 1983

1.	Dr. H.M. Ray	Professor of Anthropology University of Calcutta, West Bengal.
2.	Shri S. Jagannathan	Consultant (W.M.) North Eastern Council, Shillong - 1
3.	Shri E.S. Thangam	Officer on Special Duty Arunachal Pradesh Forest Corp. Ltd. P.O. Deomali - 786 629
4.	Shri A.V. Ramakrishna Rao	Joint Commissioner (SC-F) Department of Agriculture & Cooperation, Government of India.
5.	Shri A.V.R.C. Krishna Murty	Conservator of Forests Visakhapatnam (A.P.) - 530 004
6.	Shri R. Satapathy	Director, Soil Conservation Orissa, Bhubaneswar
7.	Shri G. Mahapatra	Deputy Director, Soil Conservation, Orissa
8.	Dr. N. Patnaik	Director, THRTI, Bhubaneswar Orissa.
9.	Shri B.L. Das	Addl. Chief Conservator of Forests, Orissa.
10.	Shri S.N. Das	Chief Conservator of Forests, Orissa.
11.	Shri C.S. Dani	Conservator of Forests, Berhampur.

FUTURE STRATEGY AND RECOMMENDATIONS

Basically it is agreed that there are far better agricultural practices than shifting cultivation. With progressive reduction of jhuming cycle and falling productivity primarily attributable to population pressures, this practice has no longer any merit to command. There are not two opinions as to the urgency to banish this practice. Past attempts and experience reveal that in the first place, there was no concerted effort and secondly in several cases, involvement of target groups was totally absent. These and other features having significant bearing on the economy of shifting cultivators have been vividly brought out by the participants in the deliberations of the Task Force. They are summarised below :

1) Inherent resistance to change is a common characteristic of all people and tribals too. However, younger age groups are generally more amenable to new ideas and changes.

2) Long range success of a programme depends on self-sustainability and, therefore, the involvement of beneficiaries. A stake in the shape of employment opportunity or a share to the accruing benefits would attract people to the programmes.

3) Programme benefits should conform to the direct needs of the people. They should help their economic status both in short term and long range, e.g. cashew/coffee type of cash crop programmes provide economic benefits on a continuous basis with low gestation period but teak, bamboo or pine plantations fail to do so; similarly minor irrigation/ water harvesting structures promoting farm productivity provide greater attraction.

4) Introduction of technology or better methods should be a gradual process and be in harmony with the absorption capacity of the target group. Often loss of faith in otherwise proved superior practices is traceable to introduction of sophisticated mechanical devices that call for skills not available locally. Situation is sometimes made worse as maintenance facilities for such mechanical contrivances are not even planned.

5) Small improvements such as use of pedigree seed and fertilizers should be the starting point. It would not only give immediate dividends to the

people but would help administrators win their confidence to introduce better programmes.

6) Improving accessibility through roads, providing fair price shops for essential commodities and marketing facilities to sell their products are stressed. Lack of these facilities attract middlemen who deprive the people of their legitimate share of profit for their wares or otherwise make their life costlier by selling essential requirements dearly. As a result, whatever may be their efforts to increase production or productivity, their economic status would remain static. The role of Government-supported Tribal Development Corporations, according to several participants in the deliberations, leaves much to be desired. It would appear that the prices they pay to tribals for primary produce are often too low compared to the general market and at the same time no other purchaser is allowed to enter the field in view of their monopoly right.

7) It is necessary to introduce avocations that are not based on land resources or agriculture, since arable land, given the population pressures and the mountainous terrain, can never be adequate. Introduction of shifting cultivators into Government service or private employment through relaxation of qualifications would be a proper first step. Vocational training so as to fit them in jobs of secondary/tertiary sectors of economy also merits serious consideration.

8) Stress on the subsidiary occupations like sericulture, poultry, piggery would provide income better than the primary occupations like agriculture and help the people move away from shifting cultivation gradually.

9) Area development approach with a single agency charged with multi-disciplinary activities as launched by Central Government through introduction of Integrated Tribal Development Agencies was generally commended, for the principle behind it is to ensure coordination of all round development. But many participants expressed anxiety over uneven emphasis on relevant activities and sometimes encouragement of sectoral programmes without consideration of ill-effects on other economic resources.

10) While watershed development approach is commendable, it is essential to reckon the whole village in the development planning. Further, having regard to community based life style of tribals, it is desirable that programmes are separately planned for each ethnic group or compatible groups.

11) It is necessary to identify the individual beneficiaries and benefits that would accrue to each in designing the development programmes. This will enable enthusiastic participation of people.

12) Appropriate research programmes should be formulated to study various different approaches and changes needed to determine the most economic and superior means of weaning away the people from shifting cultivation practices. Establishment of an Institute for this and allied purposes has been recommended.

13) No one single programme would suit all geographical and climatic conditions. The programme should be, therefore, designed providing enough flexibility but taking into account the social customs and traditions of the people of the locality.

14) Stress has been laid to involve voluntary organisations in planning and implementing the programmes both to device the benefit of their devotion to the cause and of the rapport they may have already established with the people through this work.

15) Since the State Governments are more concerned with short term priorities, the Central Government should play a dominant role and provide all the required financial assistance.

16) Absence of reliable statistical data on extent of area under shifting cultivation, number of persons or families involved is a major drawback in identifying the dimensions of the problem or designing solutions to tackle it. Therefore the Task Force recommends that data collection on shifting cultivation should be made part of the programme of Agriculture census. The aid of other allied agencies should also be sought to fill the present voids. Assistance from central statistical organisation and National Sample Survey could be sought.

2. Each of these points has its relevance and has to be given due weight in formulating any plan of action. It would appear from past experience that these schemes never rated the priority they deserved in getting funds assigned in the States. There was no dearth of ideas, plans and schemes. The previous studies on the subject testify to this as also the pioneering efforts of Arunachal Pradesh, Tripura and North East Council.

3. It is the unanimous conclusion of the Task Force having regard to the facts and circumstances revealed by this study that :

1) The Central Govt. should finance and coordinate the programmes on shifting cultivation.

2) The programmes should be designed with economic development of the 'area' as the key aim and should ensure that the beneficiaries also participate in the formulation of the programme.

3) While watershed could be the major unit of management, programmes should cover the whole village for it is the social and administrative entity traditionally.

4) Single agency administration with multiple disciplines under its command comparable to the principle behind the administration through Integrated Tribal Development Agencies is best suited to tackle the problem. Nonetheless certain considerations have to be borne in mind. The shifting cultivators depend heavily on forests not only for the land for cultivation but also for earning subsidiary income through collection of minor forest produce or as wage earners in forestry activities. It is essential that their bias towards forestry and forest activities remain so that these resources could be conserved for mutual benefit.

4. An attempt has been made to develop a model using the concepts made in the above recommendations. For this purpose, the content of the generally successful programmes initiated by North Eastern Council (NEC), Tripura and Arunachal Pradesh Governments is examined. The NEC programmes are multi-disciplinary in content and are also beneficiary oriented. These are described in some detail in Chapter V. The schemes taken up by Tripura Government (also described in the Chapter V) are similar. Both have the merit of dealing with the basic problem i.e. the economic poverty of the jhumias. Be it providing terraced cultivation, irrigation to land, pisciculture development, housing assistance or horticulture programme - all of them tackle the problem at grassroot level and directly upgrade the living conditions of the jhumias. The rubber plantation programme formulated by Tripura Government for implementation through the specially established institution viz. Tripura Rehabilitation Corporation is a well thought out project for the rehabilitation of jhumias, underlining the same concept. The cash crop development programmes of raising coffee/cardamom under the auspices of Arunachal Pradesh Forest Development Corporation with the same objectives also fall in the same category. Summaries of these programmes are given in the Annexures VI-I and VI-II both to provide details and also to derive certain basic parameters for the model.

5. In all these programmes, the contribution to success seems to emanate from two important elements: benefit to the individual (terraced fields, cash crops, poultry, pisciculture, piggery) and benefit to the community (roads, hospitals, fair price shops, etc.). On this consideration, the model programme should comprise the following components:

A. Beneficiary—Individual/family

1) Development of material assets (e.g. Terraced lands, cash crops, poultry, piggery, etc.)

2) Development of human resources (e.g. Development of mental and physical skills for vocations such as carpentry, tailoring, smithcraft, etc.)

B. Beneficiary—Community

3) Development of infrastructure (e.g. roads, hospitals, schools etc.)

6. The older generations who resist drastic changes could be attracted with a programme content that retains the traditional touch, e.g. Agriculture or Horticulture or land resource based economy mainly. The younger generation could be exposed to new fields of gainful employment where 'skills' are needed. Thus the programme to develop 'human resources' would prepare them to new avocations which need not be based on a tradition that adversely affects resource conservation. Infrastructure development as an important supporting activity would provide the framework for integrated development of the community as a whole in this model.

7. Coming to the estimation of the investment to initiate such programmes, the concensus of the Task Force was to go by the programmes on hand as in Tripura and Arunachal Pradesh. The NEC programme reveals per family investment of about Rs. 8500 but does not seem to include cost of administraton; that of rubber plantation programme of Tripura calls for Rs. 28500 and that of cash crop programme of Arunachal Pradesh calls for Rs. 30,000. The Tripura programme of rubber plantation should need far less additional investment than Rs. 28,500 per family since nearly Rs. 12,000 is available (as of now) as subsidy from the Rubber Board. The cash crop programme if taken up by an autonomous institution like Arunachal Pradesh Forest Corporation should also need less Government investment as loan finance from Banks should be available. However, having regard to the need to work out an investment model that serves diverse situations and different programmes an investment of Rs. 30,000 (current prices) per beneficiary family appears to be essential.

8. Given the present level of shifting cultivator families at about 6.25 lakh numbers and the assumption that collateral efforts would not allow this number to exceed, the total requirement of funds would be of the order of Rs. 1875 crores. If this programme is planned for a period of 10 years (say Seventh and Eighth Five Year Plans), the annual cost would be of the order of

Rs. 187.5 crores, at current prices. If a programme could be developed to attract institutional finance through formation of autonomous agencies on the lines of Tripura Rehabilitation Corporation, the investment of the Government through equity funding could come down to 1/5th of this requirement or Rs. 37.5 crores per annum. This would surely take sometime to develop into a feasible proposition. In the meantime, the Central Government should sponsor a programme with Rs. 50 crores outlay for the Seventh Five Year Plan period. This fund should be utilised through schemes formulated by individual States according to the individual requirements. However, a stipulation can be made that the scheme should be beneficiary and community oriented, village should be the maximum limit of investment for each beneficiary family should not exceed a specified sum, as suggested above.

9. Further, the task force recommends to design the programme with the three elements identified earlier viz., Development of a) material assets, (b) human resources and (c) infrastructure. While providing enough flexibility to the States to formulate schemes suiting local requirements, the Central Government should judge the performance in terms of the number of shifting cultivators brought down.

10. The Task Force also noted that FAO/UNFPA Project commissioned for study and compilation of report "Population Data regarding, forest communities practising shifting cultivation" in fact comprised two phases, the first phase having been completed with the publication of report on India in 1980. Phase II was to comprise a project formulated on integrated area development basis and two project locations were selected one in Orissa and another in Arunachal Pradesh. The basis and approach for these projects to be taken up on pilot scale, seem to be no different from what has been discussed here. Since some thinking has already gone into this, these projects might be got expedited.

11. The Task Force also emphasises on the motivation factor. Association of devoted sociologists, anthropologists and specialised institutions would go a long way in the successful implementation of the programme.

12. The view of the Task Force is that action is wanting and the main reason for this is lack of funds and low priority. If action is not taken in right earnest and soon enough the degradation of land, loss of productivity and all round deterioration of environment may become much more serious.

Statement I

BRIEF PARTICULARS OF PODU CONTROL SCHEME - ORISSA*

Sl. No	District	I.T.D.A.	Podu Control Project	No.of villages	Total Project Outlay (87-88 to 91-92) Rs. in lakhs	Total allocation of funds to ITDAs till end of March 1991	Progressive utilisation of funds till end of March 1991	Balance of funds available till the end of March 1991	Funds likely to be available during 1991-92	Approx. Allotment per village in lakhs
1.	Phulbani	Balliguda	1. Belghar	58	377.70	145.90	116.06	29.84	231.80	6.52
			2. Manikeswar	11	118.62	54.32	54.32	-	64.60	10.78
2.	Sundargarh	Bonei	3. Lahunipada	5	154.00	83.65	64.08	19.37	70.35	30.8
3.	Keonjhar	Keonjhar	4. Banspal	48	600.00	210.30	134.26	76.04	389.70	12.5
4.	Koraput	Koraput	5. Podagada	10	88.88	61.92	40.96	20.96	26.96	8.88
		Rayagada	6. Kashipur	11	62.08	19.64	19.64	-	42.44	5.64
5.	Ganjam	Paralakhe-mundi	7. Mohana	5	73.66	23.24	7.73	9.13	50.42	14.73
			8. Muagada Gumma	6	34.08	16.86	1.60	9.64	17.75	9.14
6.	Kalahandi	Th. Rampur	9. Th. Rampur	16	133.27	79.02	26.96	52.06	54.25	8.32
			10. Lanjigarh	10	56.33	32.15	10.79	21.36	24.73	5.63
	6 Districts	7 ITDAs	10 Projects	185	1700.00	727.00	488.40	238.60	937.00	112.94

* Source : Harijan & Tribal Welfare Department

Statement II

PODU PREVENTION PROGRAMME

*BASIC DATA

Total No. of villages covered in the Scheme : 48

		S.T.	S.C.	OTHERS	TOTAL
No. of Household		2000	58	239	2297
Population					
Adult	Male	3077	63	283	3423
	Female	2738	60	272	2070
Children	Male	2000	90	203	2353
	Female	2071	81	187	2339
	Total	9946	294	945	11185

Land

		(in hect)
Total Geographical area		
	Private land	30376.4465
	Rakhit land	1799.0061
	Sarbasadharan land	3422.9339
Abadjogya Anabadi Land		
	Under Encroachment	782.2853
	Free from Encroachment	648.6625
Abad Ajogya Anabadi		17001.5790
	Podu Lands	2743.3021
Total Land under cultivation		4675.9310
	Private land	1799.0061
	Encroached land	133.6228
	Podu lands	2743.3021

* *Source : ITDA, Keonjhar*

Statement III

ABSTRACT (SECTOR WISE)*

			(in lakhs)
1)	Training & Motivation		13.728
2)	Communication - 69 CD works		60.000
3)	Soil Conservation :		
	Land Reclamation - 400 Ha.		
	Land Development - 800 Ha.		68.450
	Sisal Plantation - 160 Ha.		
	Const. of WHS - 12 Nos.		
4)	Irrigation :		
	Minor Irrigation - 40 Nos.		
	Renovation of MIP - 2 Nos.		139.000
	Lift Irrigation - 12 Nos.		
5)	Plantation of Podu area - 1650 Ha.		57.750
6)	Agricultural input assets		72.430
7)	Horticulture Plantation		
	Private - 132 Ha.		
	Govt. - 468 Ha.		150.000
8)	Allied Sectors (Beekeeping/Bidimaking/ Khalisticking/Palm mat making/ Tailoring/Basket making/ Broom making/Khapermaking/ Oil processing/Small trade etc.		10.650
9)	Miscellaneous Pay, DA, etc.		27.992
			600.000
	Land required for settlement in favour of eligible tribes		1345.0355 Ha
	Land available (Other than objectionable)		927.0365 Ha
	Balance required		417.9990 Ha
	No. of eligible tribals for settlement of land		644 Nos.

* *Source : ITDA , Keonjhar*

Statement IV*

Sl. No.	Name of the village	Sl. No.	Name of the village
1.	Along - H.C. Pur Block	25.	Khajuribani
2.	Bayakumutia	26.	Khuntamara
3.	Baitarani	27.	Mundala
4.	Budhighar	28.	Nadam Bounsadiha
5.	Bali	29.	Pandadar
6.	Bankuda Budhakhaman - H.C. Pur Block	30.	Phulbadi
7.	Baragada	31.	Panasanasa
8.	Budhakhaman - H.C. Pur Block	32.	Remulighati
9.	Duarsuni	33.	Bada Radhuan
10.	Dumuria	34.	Sana Radhuan
11.	Ghungi	35.	Raidiha
12.	Guptaganga	36.	Sinkulapada
13.	Gonasika	37.	Saria
14.	Goliabandha Raidiha	38.	Sapalanji Telkoi Block
15.	Hatisila	39.	Talachampei
16.	Haladipani	40.	Tangarpada
17.	Jantari	41.	Talasumath
18.	Jamudiha	42	Tala Baitarani
19.	Kodipasa	43.	Talapada
20.	Kundhei	44.	Toranipani
21.	Kadalibadi	45.	Tankajoda - H.C. Pur Block
22.	Khediadihi	46.	Tamanga - Telkoi Block
23.	Kanjipani	47.	Uparsumath
24.	Kapotadiha	48.	Upar Champei

Source : ITDA, Keonjhar

UP-TO-DATE ACHIEVEMENTS

a)	Horticulture :		
	Area covered	-	15 villages 148.2 Hect.
	Plantation	-	Mango - 2158 Nos.
	Jack fruit	-	21128 Nos.
	Guava	-	13432 Nos.
	No. of beneficiaries covered	-	497 Nos.
b)	Forest Plantation :		
	Area covered	-	23 villages 615 Hects.
	Specification of plants	-	Karanj, Arjun, Cashew, Mango, Jackfruit, Neem.
c)	Agriculture :		
	Area covered	-	24 villages - 1351 Hect.
	No. of beneficiaries	-	1206 Nos.
d)	Soil conservation :		
	Construction of WHS	-	3 Nos.
	WHS under construction	-	2 Nos.
	Land development	-	40 Hect.
	Sisal plantation	-	42 Hect.
e)	Communication :		
	Construction of CD works	-	67 Nos.
f)	Other :		
	Construction of Godown	-	3 Nos.
	Distribution of Agricultural implements	-	1707 families - Rs. 3.40 Lakhs.
g)	Khalistiching machines provided to Tribal women	-	40 Nos. - Rs. 0.26 Lakhs
h)	Allied sectors to be taken up	-	637 Beneficiaries - Rs. 11.39 Lakhs
i)	Bullocks to be given	-	335 pairs - Rs 8.63 Lakhs
j)	Pisciculture	-	9 Nos. - Rs. 0.90 Lakhs
k)	Interim programme for Tea Plantation	-	1000 Hect. - Rs. 75.47 Lakhs

* *Source : ITDA, Keonjhar*

ALLOTMENT OF FUNDS & UTILISATION

			Amount Placed (Rs. in Lakhs)	Amount utilised (Rs. in Lakhs)
1)	EE, R&B Keonjhar	Communication	44.09	44.09
2)	DFO, Keonjhar	Afforestation	33.50	28.24
3)	Horticulturist	Plantation	23.00	14.00
4)	SCO, Keonjhar	Land Dev. Const. of WHS Sisal Plan.	22.77	11.60
5)	EE, MI, Keonjhar	Cost. & Renovation of M.I.	14.99	11.60
6)	DDA, Keonjhar	Agriculture	34.38	17.53

* *Source : ITDA, Keonjhar*

Statement V

CENTRAL PLACES WITH THEIR RESPECTIVE HINTERLAND VILLAGES

38. Keonjhar
    01. Jamudiha
44. Banspal
    02. Baragada
    03. Goliabandha Raidiha
    04. Khajuribani
    05. Khediadihi
    06. Khuntamara
    07. Madam Bounsadiha
    08. Ramulighati
    09. Toranipani
45. Kanjipani
    10. Baitarani
    11. Budhighar
    12. Bali
    13. Haladipani
    14. Phulbadi
    15. Panasanasa
    16. Raidiha
46. Gonasika
    17. Bayakumutia
    18. Baitarani
    19. Duarsuni
    20. Guptaganga
    21. Ghungi
    22. Jantari
    23. Kodipasa
    24. Kundhei
    25. Kadalibadi
    26. Mundale
    27. Pandadar
    28. Bada Raduan
    29. Sana Raduan
    30. Sinkulapadar
    31. Tala-Baitarani
    32. Talachampei
    33. Talasumath
    34. Tangarpada
    35. Uparsumath
    36. Upar Champei
49. Telkoi
    37. Sapananji
    38. Tamanga
53. Janghira
    39. Dumuria
    40. Kaptadiha
    41. Hatisila
    42. Saria
    43. Talapada
56. H.C. Pur
    44. Along
    45. Budhakhaman
    46. Bankuda Budhakhaman
    47. Tankajodi

* *Source : Integrated Tribal Development Plan for Keonjhar District by N. Patnaik, 1976.*

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